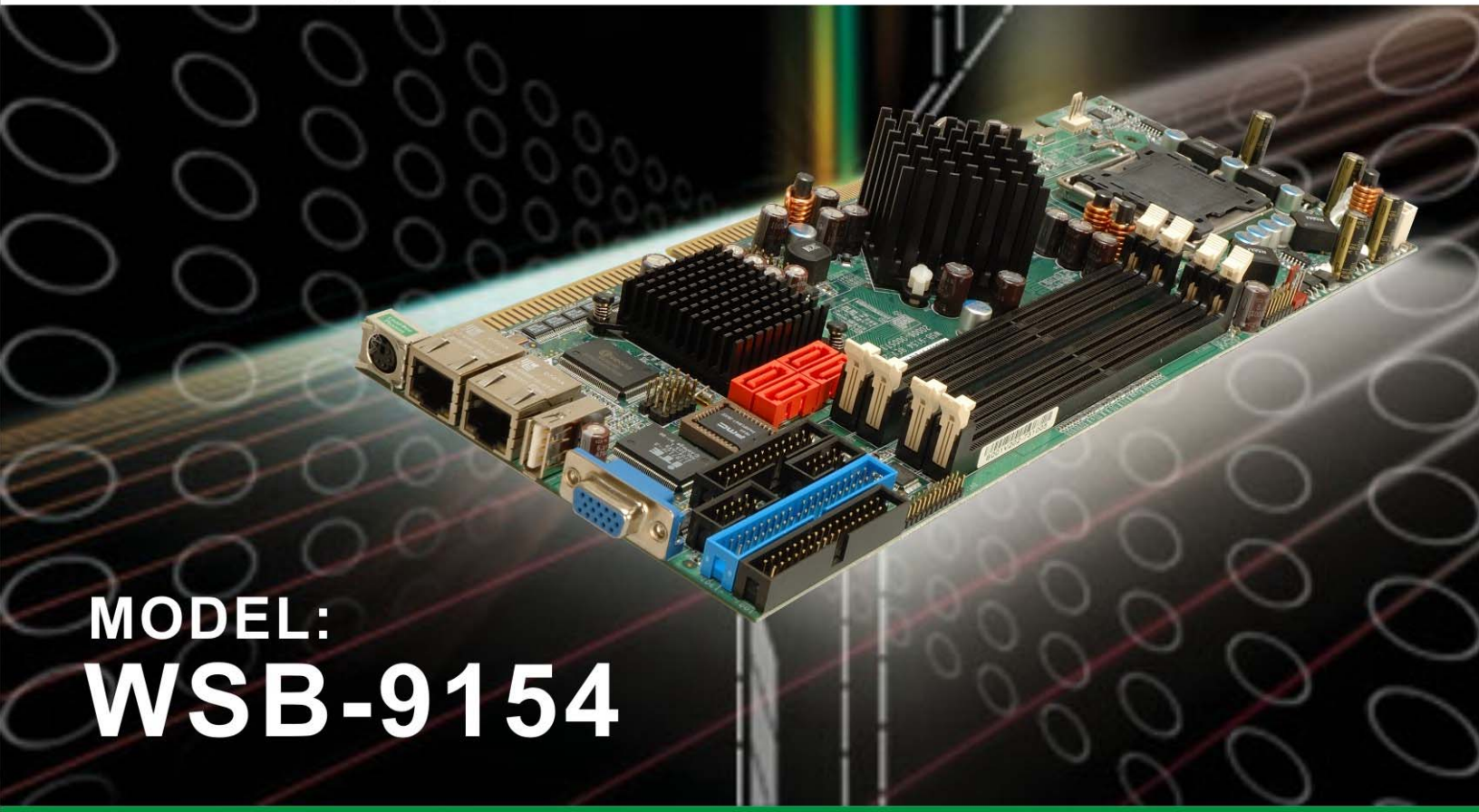
IEI Technology Corp.



MODEL:

WSB-9154

PICMG 1.0 LGA775 Intel® Pentium® 4/Celeron® D, 800MHz FSB, CPU Card with VGA, PCIe GbE, SATA and USB 2.0

User Manual

Rev. 2.00 May 2007

RoHS Lead Free

Revision

WSB-9154 CPU Card		
Date	**Version**	**Changes**
March 2006	1.00	Initial release
May 2007	2.00	- Added 65nm CPU support - Added HD audio kit support - Changed LAN chip from Marvell 88E8053 to Broadcom BCM5787M - Enhanced SCSI device compatibility

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Packing List

NOTE:

If any of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the WSB-9154 CPU card from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

The items listed below should all be included in the WSB-9154 CPU card package.

- 1 x WSB-9154 single board computer
- 1 x Mini jumper pack (P/N: 33100-000079-RS)
- 1 x ATA 66/100 flat cable (P/N: 32200-000052-RS)
- 4 x SATA cable (P/N: 32000-062800-RS)
- 2 x SATA power cable (P/N: 32100-088600-RS)
- 1 x DVI IO kit (P/N: IO-KIT-001-R20) (**DVI model only**)
- 1 x KB/MS Y cable (P/N: 32000-000138-RS)
- 1 x RS-232 cable (2 COM Ports) (P/N: 19800-000051-RS)
- 1 x USB cable (P/N: CB-USB02-RS)
- 1 x Utility CD (P/N: 51100-000112-RS)
- 1 x Quick installation guide (QIG) (P/N: 51000-021969-RS)

Images of the above items are shown in **Chapter 3**.

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Glossary

AC ’97	Audio Codec 97
ACPI	Advanced Configuration and Power Interface
APM	Advanced Power Management
ARMD	ATAPI Removable Media Device
ASKIR	Shift Keyed Infrared
ATA	Advanced Technology Attachments
BIOS	Basic Input/Output System
CFII	Compact Flash Type 2
CMOS	Complementary Metal Oxide Semiconductor
CPU	Central Processing Unit
Codec	Compressor/Decompressor
COM	Serial Port
DAC	Digital to Analog Converter
DDR	Double Data Rate
DIMM	Dual Inline Memory Module
DIO	Digital Input/Output
DMA	Direct Memory Access
EIDE	Enhanced IDE
EIST	Enhanced Intel SpeedStep Technology
FDD	Floppy Disk Drive
FDC	Floppy Disk Connector
FFIO	Flexible File Input/Output
FIFO	First In/First Out
FSB	Front Side Bus
IrDA	Infrared Data Association
HDD	Hard Disk Drive
IDE	Integrated Data Electronics
I/O	Input/Output
ICH6	I/O Controller Hub 7
L1 Cache	Level 1 Cache
L2 Cache	Level 2 Cache
LCD	Liquid Crystal Display
LPT	Parallel Port Connector
MAC	Media Access Controller
OS	Operating System
PCI	Peripheral Connect Interface
PIO	Programmed Input Output
PnP	Plug and Play
POST	Power On Self Test
RAM	Random Access Memory
SATA	Serial ATA
S.M.A.R.T	Self Monitoring Analysis and Reporting Technology
SPD	Serial Presence Detect
S/PDI	Sony/Philips Digital Interface
SDRAM	Synchronous Dynamic Random Access Memory
SIR	Serial Infrared
UART	Universal Asynchronous Receiver-transmitter
USB	Universal Serial Bus
VGA	Video Graphics Adapter

Chapter

1

Introduction

1.1 Introduction

The RoHS compliant WSB-9154 PICMG 1.0 CPU card is a LGA775 Intel® Pentium® 4 or Intel® Celeron D CPU platform. The WSB-9154 has a maximum front side bus (FSB) frequency of 800MHz and supports 533MHz 1GB dual channel memory modules. The WSB-9154 also comes with dual PCI Express (PCIe) Gigabit Ethernet (GbE) and has flexible storage options including support for four second-generation serial ATA (SATA) hard disk drives (HDD), two IDE HDD and a floppy disk drive (FDD) The WSB-9154 provides additional connectivity for one parallel, two RS-232 serial and up to seven USB 2.0 devices.

1.1.1 WSB-9154 Benefits

Some of the WSB-9154 benefits are listed below:

- Storage flexibility with support for SATA II drives and IDE drives
- DDR2 support enables faster data transfers
- Multiple I/O interfaces provide connectivity to a broad range of external peripheral devices

1.1.2 WSB-9154 Features

Some of the WSB-9154 features are listed below.

- Support for the following LGA775 processors:
  - Intel® Pentium® 4
  - Intel® Celeron® D
- Maximum FSB of 800MHz
- Maximum of 4GB dual-channel memory supported with two 240-pin dual channel 400MHz or 533MHz 1GB DDR2 DIMMs
- Four SATA II drives with transfer rates of 3.0Gb/s supported
- High performance PCIe GbE Ethernet controllers
- Seven USB 2.0 devices supported
- PICMG 1.0 form factor
- RoHS compliant

1.2 WSB-9154 Overview

1.2.1 WSB-9154 Overview Photo

The WSB-9154 has a wide variety of internal and external peripheral connectors. A labeled photo of the peripheral connectors on the front of the WSB-9154 is shown in **Figure 1-1**.

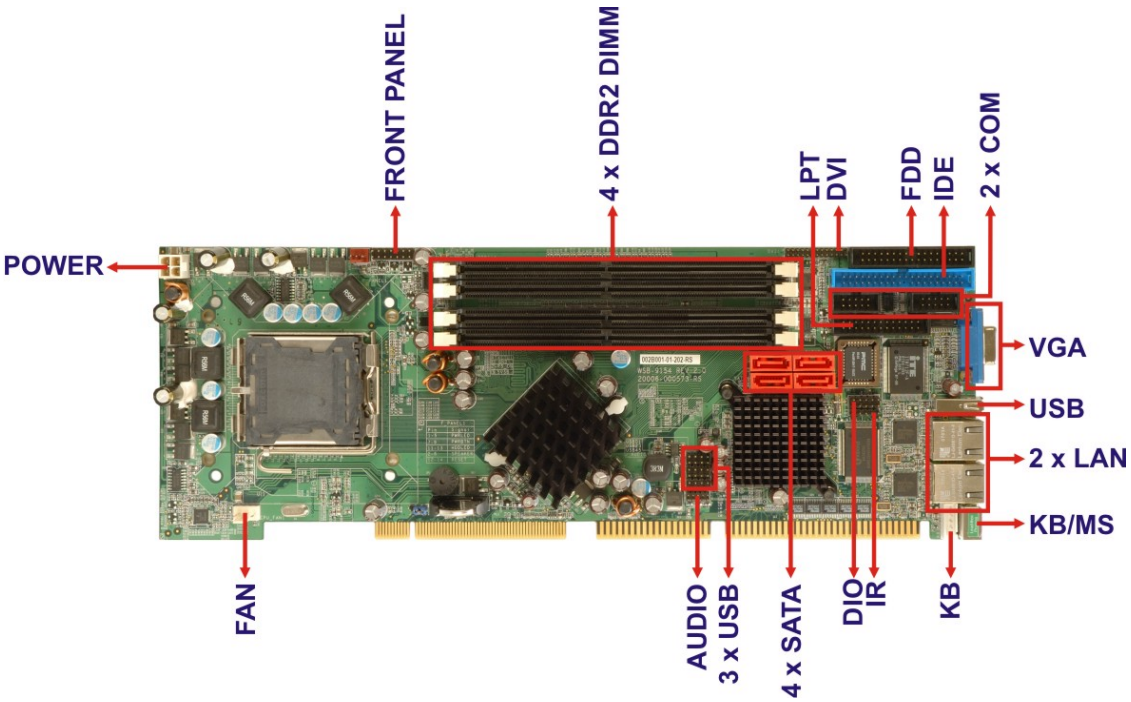

Figure 1-1: WSB-9154 Overview

1.2.2 WSB-9154 Peripheral Connectors and Jumpers

The WSB-9154 has the following connectors on-board:

- 1 x Audio connector
- 1 x Backplane power connector
- 1 x Digital input/output connector
- 1 x DVI connector (**DVI model only**)
- 1 x Fan connector
- 1 x Floppy disk drive (FDD) connector
- 1 x Front panel connector

- 1 x IDE disk drive connector
- 1 x Infrared interface connector
- 1 x Keyboard connector
- 2 x Serial port connectors
- 1 x Parallel port connector
- 4 x Serial ATA (SATA) drive connectors
- 3 x USB connectors

The WSB-9154 has the following external peripheral interface connectors on the board rear panel

- 2 x Ethernet connectors
- 1 x P/S2 Keyboard/Mouse connector
- 1 x USB port connectors
- 1 x VGA connector

The WSB-9154 has the following on-board jumpers:

- Clear CMOS

1.2.3 Technical Specifications

WSB-9154 technical specifications are listed in **Table 1-1**. See **Chapter 2** for details.

Specification	WSB-9154
Form Factor	PICMG 1.0
System CPU	LGA775 Intel® Pentium® 4 LGA775 Intel® Pentium® D
Front Side Bus	533MHz or 800Mhz
System Chipset	Northbridge: Intel® 915GV Southbridge: Intel® ICH6
Memory	Four 240-pin DIMM sockets support dual-channel 400MHz or 533MHz DDR2 DIMMs with a maximum capacity of 1GB each

Specification	WSB-9154
Display	CRT: Integrated in the Intel® 915GV to support CRT DVI: Silicon Image SIL1362CLU (DVI model only)
BIOS	AMI Flash BIOS
Audio	7.1 channel or 5.1 channel audio with optional audio kit
LAN	Dual PCIe GbE Broadcom BCM5787M chipsets
COM	Two RS-232 serial ports
USB2.0	Seven USB 2.0 devices supported
IDE	One 40-pin IDE connects to two Ultra ATA33/66/100 devices
Floppy Disk Drive	One FDD connector connects to a single FDD
SATA	Four 1.5Gb/s SATA drives supported
Keyboard/mouse	One 6-pin connector connects to a keyboard or mouse One on-board 5-pin connector connects to a keyboard
Super I/O	ITE IT8712F
Digital I/O	One 8-bit digital I/O connector (4-bit input / 4-bit output)
Infrared	One Infrared connector
Watchdog Timer	Software programmable 1-255 sec. by super I/O
Power Supply	AT and ATX supported
Temperature	0ºC – 60ºC (32ºF - 140ºF)
Humidity (operating)	5%~95% non-condensing
Dimensions (LxW)	338mm x 122mm
Weight (GW)	1100g

Table 1-1: Technical Specifications

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Chapter

2

Detailed Specifications

2.1 Overview

This chapter describes the specifications and on-board features of the WSB-9154 in detail.

2.2 Dimensions

2.2.1 Board Dimensions

The dimensions of the board are listed below:

- **Length**: 338mm
- **Width**: 122mm

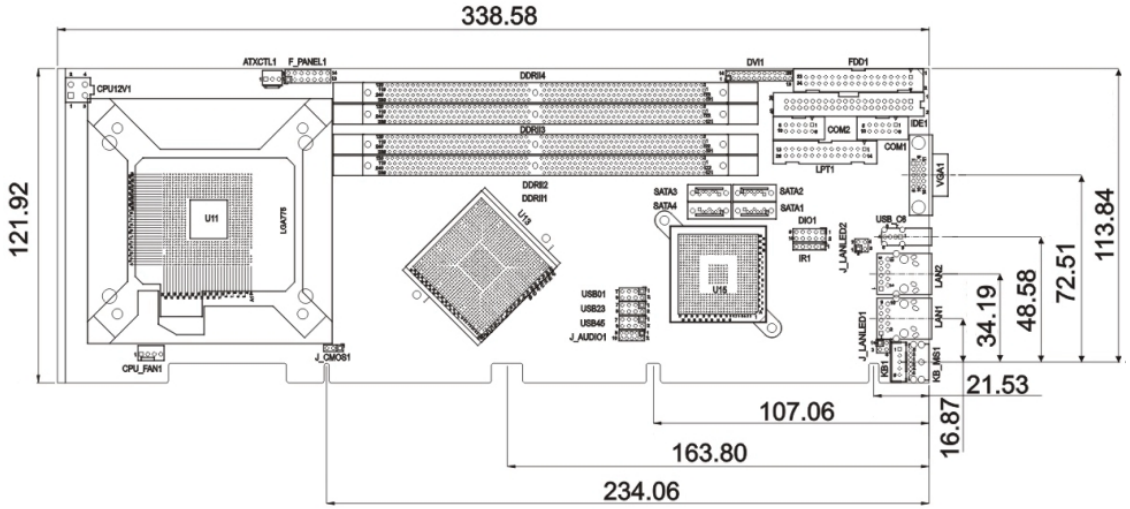

Figure 2-1: WSB-9154 Dimensions (mm)

2.2.2 External Interface Panel Dimensions

External peripheral interface connector panel dimensions are shown in **Figure 2-2**.

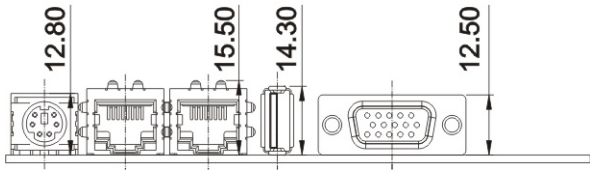

Figure 2-2: External Interface Panel Dimensions (mm)

2.3 Data Flow

Figure 2-3 shows the data flow between the two on-board chipsets and other components installed on the motherboard and described in the following sections of this chapter.

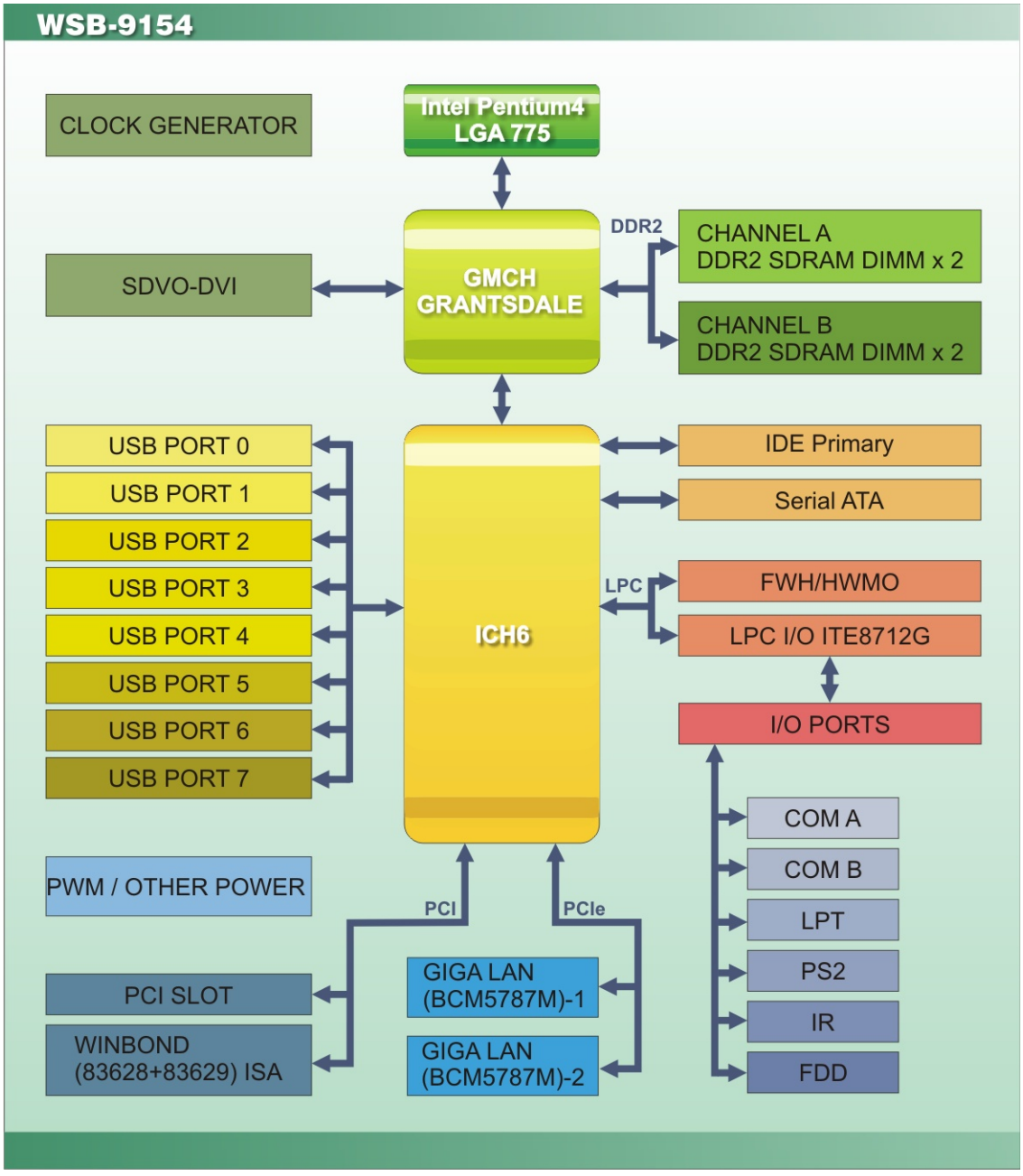

Figure 2-3: Data Flow Block Diagram

2.4 Compatible Processors

2.4.1 Compatible Processor Overview

The WSB-9154 supports the following LGA775 processors:

- Intel® Pentium® 4
- Intel® Pentium® D

All of the above processors communicate with the Intel® 915GV northbridge chipset through an 800MHz front side bus (FSB). Features of the supported processors are listed in **Table 2-1**.

CPU Features	Pentium® 4	Pentium® D
Dual Core	No	Yes
Enhanced Halt State (C1E)	Yes	No
Enhanced Intel® SpeedStep® Technology	Yes	No
Execute Disable Bit	Yes	Yes
Hyper-Threading Technology	Yes	No
Intel® EM64T	Yes	Yes
Intel® Thermal Monitor	Yes	No
Intel® Virtualization Technology	Yes	Yes

Table 2-1: Processor Features

2.4.2 Supported Processors

Specifications for the compatible processors are listed in **Table 2-2** below:

Family	CPU Speed	Processor	Bus Speed	Mfg Tech	Stepping	Cache Size
Intel® Pentium® 4	3.80 GHz	672	800 MHz	90 nm	R0	2 MB
	3.80 GHz	571	800 MHz	90 nm	E0	1 MB
	3.80 GHz	670	800 MHz	90 nm	N0	2 MB
Intel® Pentium® D	3.60 GHz	960	800 MHz	65 nm	C1	4 MB (2x2)
	3.40 GHz	950	800 MHz	65 nm	B1	4 MB (2x2)
	3.40 GHz	945	800 MHz	65 nm	D0	4 MB

Table 2-2: Supported Processors

2.5 Intel® 915GV Northbridge Chipset

2.5.1 Intel® 915GV Overview

The Intel® 915GV northbridge chipset has the Generation 3.1 Intel Integrated Graphics Engine and the Intel® Graphics Media Accelerator 900 (Intel® GMA 900). The integrated graphics and memory controller hub (GMCH) facilitates the flow of information primarily between the following four interfaces:

- Front Side Bus (FSB)
- System Memory Interface
- Graphics Interface
- Direct Media Interface (DMI)

2.5.2 Intel® 915GV Memory Support

WARNING!

Only DDR2 memory modules can be installed on the WSB-9154. Do not install DDR memory modules. If a DDR memory module is installed on the WSB-9154, the WSB-9154 may be irreparably damaged.

The Intel® 915GV northbridge chipset on the WSB-9154 supports four DDR2 240-pin DIMMs with the following features:

- four 240-pin DIMMs
- DDR2 only (**DO NOT** install a DDR DIMM)
- Single-channel or dual-channel
- Capacities of 256MB, 512MB or 1GB
- Transfer speeds of 400MHz or 533MHz
- 64-bit wide channel

The memory sockets are shown in Figure 2-4.

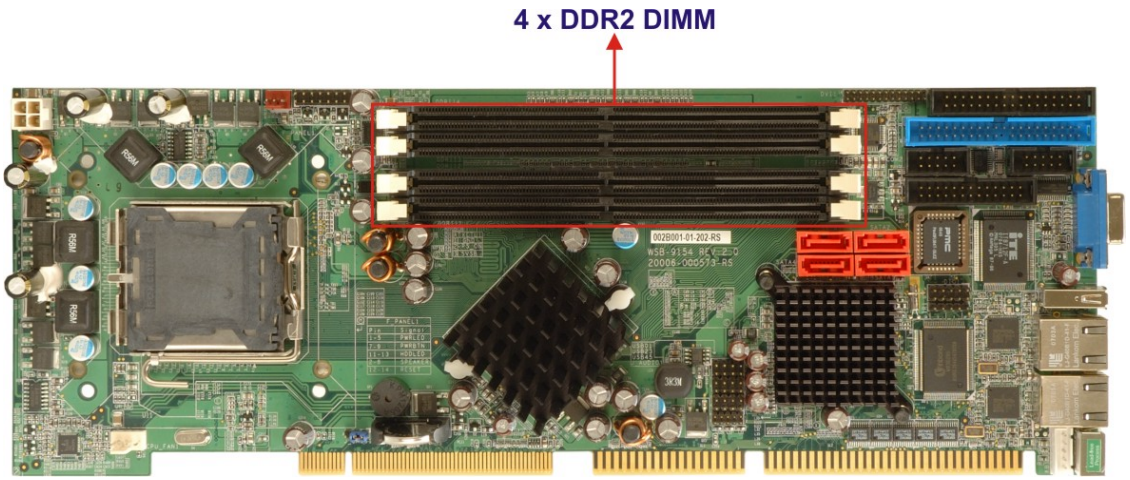

Figure 2-4: 240-pin DDR2 DIMM Socket

2.5.3 Intel® 915GV Integrated Graphics

The Intel® 915GV northbridge chipset has an Intel® Third-generation Graphics Core graphics engine that supports the following display devices:

- Analog CRT
- S-DVO ports

2.5.3.1 Intel® 915GV Analog CRT Support

A DB-15 VGA connector on the external peripheral interface connector panel is interfaced to the Intel® 915GV graphics engine. The Intel® 915GV internal graphics engine has an integrated 400 MHz DAC frequency for up to 2048x1526 resolution for both analog and digital displays.

2.5.3.2 Intel® 915GV SDVO Support (DVI Model Only)

The Intel® 915GV internal graphics engine has the following SDVO output features:

- Concurrent operation of PCIe x 1 with SDVO
- Two SDVO ports supported
  - DVI 1.0 support for external digital monitor
  - Display hot plug support

2.5.4 Intel® 915GV Direct Media Interface (DMI)

Intel® 915GV northbridge GMCH is connected to the Intel® ICH6 Southbridge Chipset through the chip-to-chip Direct Media Interface (DMI). Features of the Intel® 915GV DMI are listed below:

- 2GB/s (1GB/s in each direction) bus speed
- 32-bit downstream address

2.6 Intel® ICH6 Southbridge Chipset

2.6.1 Intel® ICH6 Overview

The Intel® ICH6 southbridge chipset is connected to the Intel® 915GV northbridge GMCH through the chip-to-chip Direct Media Interface (DMI). Some of the features of the Intel® ICH6 are listed below.

- Full duplex Direct Media Interface (DMI) at 10 Gb/s each direction
- Complies with PCI Express Base Specification, Revision 1.0a
- Complies with PCI Local Bus Specification, Revision 2.3 and supports 33MHz PCI operations
- Supports ACPI Power Management Logic
- Contains:
  - Enhanced DMA controller
  - Interrupt controller
  - Real-time clock
  - Timer functions
- Integrated Serial ATA host controller with DMA operations interfaced to four SATA connectors on the WSB-9154
- Integrated IDE controller supports Ultra ATA 100/66/33
- Supports USB 2.0 devices with four UHCI controllers and one EHCI controller
- Complies with System Management Bus (SMBus) Specification, Version 2.0
- Supports Audio Codec ’97 (AC’97) Revision 2.3
- Supports Intel® High Definition Audio
- Contains Low Pin Count (LPC) interface
- Supports Firmware Hub (FWH) interface

2.6.2 Intel® ICH6 Audio Codec ’97 Controller

The Audio Codec ’97 (AC’97) controller integrated into the ICH6 complies with AC’97 Component Specification, Version 2.3. The AC’97 controller is connected to the on-board audio connector. The audio connector is connected to an optional 5.1 channel or 7.1 channel audio kit with an embedded AC’97 audio codec. The AC’97 controller supports up

to six PCM audio output channels. Complete surround sound requires six-channel audio consisting of:

- Front left
- Front right
- Back left
- Back right
- Center
- Subwoofer

2.6.3 Intel® High Definition Audio Controller

The Intel® High Definition Audio controller integrated into the ICH6 is connected to the on-board audio connector. The audio connector is connected to an optional 5.1 channel (ALC655) audio kit with an embedded AC'97 audio codec or an optional 7.1 channel (ALC883) High Definition Audio codec. The audio controllers support up to six PCM audio output channels. Complete surround sound requires six-channel audio consisting of:

- Front left
- Front right
- Back left
- Back right
- Center
- Subwoofer

In addition to the basic surround sound features, the High Definition audio kit also features multi-streaming functionality.

2.6.4 Intel® ICH6 IDE Interface

The integrated IDE interface on the ICH6 southbridge supports two IDE hard disks and ATAPI devices. PIO IDE transfers up to 16MB/s and Ultra ATA transfers of 100MB/s. The integrated IDE interface is able to support the following IDE HDDs:

- **Ultra ATA/100**, with data transfer rates up to 100MB/s
- **Ultra ATA/66**, with data transfer rates up to 66MB/s
- **Ultra ATA/33**, with data transfer rates up to 33MB/s

Specification	Ultra ATA/100	Ultra ATA/66	Ultra ATA/100
IDE devices	2	2	2
PIO Mode	0 – 4	0 – 4	0 – 4
PIO Max Transfer Rate	16.6 MB/s	16.6 MB/s	16.6 MB/s
DMA/UDMA designation	UDMA 3 - 4	UDMA 3 – 4	UDMA 2
DMA/UDMA Max Transfer	100MB/s	66MB/s	33MB/s
Controller Interface	5V	5V	5V

Table 2-3: Supported HDD Specifications

2.6.5 Intel® ICH6 Low Pin Count (LPC) Interface

The ICH6 LPC interface complies with the LPC 1.1 specifications. The LPC bus from the ICH6 is connected to the following components:

- BIOS chipset
- Super I/O chipset

2.6.6 Intel® ICH6 PCI Interface

The PCI interface on the ICH6 is compliant with the PCI Revision 2.3 implementation. Some of the features of the PCI interface are listed below.

- PCI Revision 2.3 compliant
- 33MHz

- 5V tolerant PCI signals (except PME#)
- Integrated PCI arbiter supports up to seven external PCI bus masters

The PCI bus is connected to an interface gold finger on the bottom of the CPU card and supports four expansion PCI cards on the backplane. See Figure 2-5.

Figure 2-5: PCI Bus Gold Finger

2.6.7 Intel® ICH6 ISA Interface

The ISA bus is connected to an interface gold finger on the bottom of the CPU card and supports three expansion ISA cards on the backplane. ISA signals are routed to the Intel® ICH6 southbridge through the Winbond W83628G PCI-to-ISA bridge chip. See Figure 2-6.

Figure 2-6: ISA Bus Gold Finger

2.6.8 Intel® ICH6 Real Time Clock

256 bytes of battery backed RAM is provided by the Motorola MC146818A real time clock (RTC) integrated into the ICH6. The RTC operates on a 3V battery and 32.768KHz crystal. The RTC keeps track of the time and stores system data even when the system is turned off.

2.6.9 Intel® ICH6 SATA Controller

The integrated SATA controller on the ICH6 southbridge supports four SATA drives on the WSB-9154 with independent DMA operations. SATA controller specifications are listed below.

- Supports four SATA drives
- Supports 1.5Gb/s data transfer speeds
- Supports Serial ATA Specification, Revision 1.0a

2.6.10 Intel® ICH6 USB Controller

2.6.10.1 Intel® ICH6 USB Controller Overview

Up to eight high-speed, full-speed or low-speed USB devices are supported by the ICH6 on the WSB-9154. High-speed USB 2.0, with data transfers of up to 480MB/s, is enabled with the ICH6 integrated Enhanced Host Controller Interface (EHCI) compliant host controller. USB full-speed and low-speed signaling is supported by the ICH6 integrated Universal Host Controller Interface (UHCI) controllers.

2.6.10.2 WSB-9154 USB Implementation

Only seven of the Intel® ICH6 USB ports are implemented on the WSB-9154. One port is connected to an external connector and six ports are connected to 8-pin on-board headers. See **Figure 2-7**.

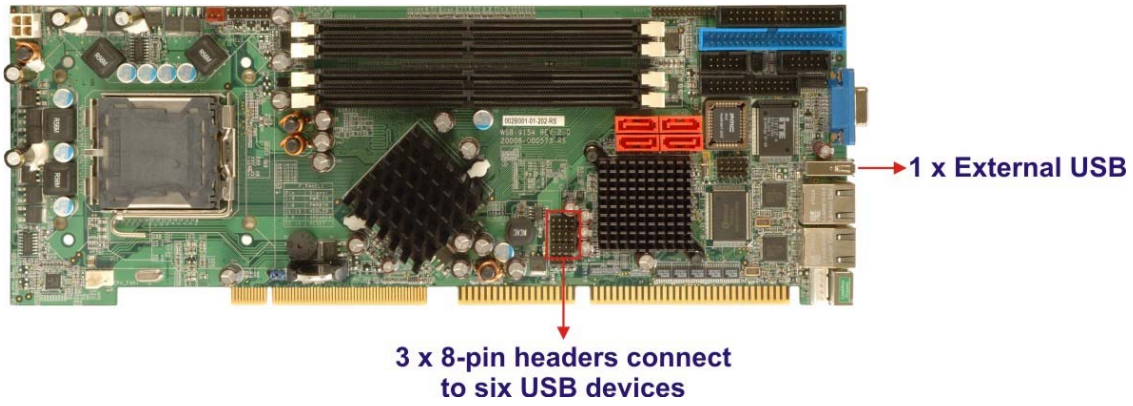

Figure 2-7: On-board USB Implementation

2.6.11 PCIe GbE Ethernet

Two PCIe x1 lanes are connected to two Broadcom BCM5787M PCIe GbE controllers shown in **Figure** 2-8 below.

Figure 2-8: Broadcom PCI GbE Controllers

The Broadcom BCM5787M is a 10/100/1000BASE-T Ethernet LAN controller. The BCM5787M combines a triple-speed IEEE 802.3 compliant Media Access Controller (MAC) with a triple-speed Ethernet transceiver, a PCIe bus interface, and an on-chip buffer memory. Some of the BCM5787 controller features are listed below:

- Integrated 10/100/1000BASE-T transceiver
- Automatic MDI crossover function
- PCIe v1.0a
- 10/100/1000BASE-T full/half-duplex MAC
- Wake on LAN support meeting the ACPI requirements
- Statistics for SNMP MIB II, Ethernet-like MIB, and Ethernet MIB (802.3z, clause 30)
- Serial EEPROM or serial flash support
- JTAG support

2.7 LPC Bus Components

2.7.1 LPC Bus Overview

The LPC bus is connected to components listed below:

- BIOS chipset
- Super I/O chipset

2.7.2 BIOS Chipset

The BIOS chipset has a licensed copy of AMI BIOS installed on the chipset. Some of the BIOS features are listed below:

- AMI Flash BIOS
- SMIBIOS (DMI) compliant
- Console redirection function support
- PXE (Pre-boot Execution Environment) support
- USB booting support

The BIOS chipset is shown in **Figure 2-9** below.

Figure 2-9: BIOS Chipset

2.7.3 Super I/O chipset

The iTE IT8712F Super I/O chipset is connected to the ICH6 southbridge through the LPC bus. The iTE IT8712F is an LPC interface-based Super I/O device that comes with Environment Controller integration.

Figure 2-10: Super I/O Chipset

Some of the features of the iTE IT8712F chipset are listed below:

- LPC Interface
- PC98/99/2001, ACPI and LANDesk Compliant
- Enhanced Hardware Monitor
- Fan Speed Controller
- SmartGuardian Controller
- Single +5V Power Supply
- Two 16C550 UARTs for serial port control

- One IEEE 1284 Parallel Port
- Floppy Disk Controller
- Keyboard Controller
- Watchdog Timer
- Serial IRQ Support
- Vbat & Vcch Support
- Single +5V Power Supply

Some of the Super I/O features are described in more detail below:

2.7.3.1 Super I/O LPC Interface

The LPC interface on the Super I/O complies with the Intel® Low Pin Count Specification Rev. 1.0. The LPC interface supports both LDRQ# and SERIRQ protocols as well as PCI PME# interfaces.

2.7.3.2 Super I/O 16C550 UARTs

The on-board Super I/O has two integrated 16C550 UARTs that can support the following:

- Two standard serial ports
- IrDa 1.0 and ASKIR protocols

2.7.3.3 Super I/O Enhanced Hardware Monitor

The Super I/O Enhanced Hardware Monitor monitors three thermal inputs, VBAT internally, and eight voltage monitor inputs. These hardware parameters are reported in the BIOS and can be read from the BIOS Hardware Health Configuration menu.

2.7.3.4 Super I/O Fan Speed Controller

The Super I/O fan speed controller enables the system to monitor the speed of the fan. One of the pins on the fan connector is reserved for fan speed detection and interfaced to the fan speed controller on the Super I/O. The fan speed is then reported in the BIOS.

2.7.3.5 Super I/O Parallel Port

The Super I/O parallel port (LPT) supports standard mode, enhanced mode and high-speed mode parallel port devices. The LPT is compliant with the following LPT modes.

- Standard mode
  - Bi-directional SPP compliant
- Enhanced mode
  - EPP v1.7 compliant
  - EPP v1.9 compliant
- High-speed mode
  - ECP, IEEE 1284 compliant

2.7.3.6 Super I/O Keyboard Controller

The Super I/O keyboard controller can execute the 8042 instruction set. Some of the keyboard controller features are listed below:

- The 8042 instruction is compatible with a PS/2 keyboard and PS/2 mouse
- Gate A20 and Keyboard reset output
- Supports multiple keyboard power on events
- Supports mouse double-click and/or mouse move power on events

2.8 Environmental and Power Specifications

2.8.1 System Monitoring

Three thermal inputs on the WSB-9154 Super I/O monitor the following temperatures:

- System temperature
- Power temperature
- CPU temperature

Eight voltage inputs on the WSB-9154 Super I/O monitor the following voltages:

- Vcore
- +2.5V

- +3.3V
- +5.0V
- +12.0V
- DDR Vtt
- +1.5V
- 5VSB

The WSB-9154 Super I/O Enhanced Hardware Monitor also monitors the following voltages internally:

- VBAT

The WSB-9154 Super I/O Enhanced Hardware Monitor also monitors the following fan speeds:

- CPU Fan speed

The values for the above environmental parameters are all recorded in the BIOS Hardware Health Configuration menu.

2.8.2 Operating Temperature and Temperature Control

The maximum and minimum operating temperatures for the WSB-9154 are listed below.

- Minimum Operating Temperature: 0ºC (32°F)
- Maximum Operating Temperature: 60°C (140°F)

A cooling fan and heat sink must be installed on the CPU. Thermal paste must be smeared on the lower side of the heat sink before it is mounted on the CPU. Heat sinks are also mounted on the northbridge and southbridge chipsets to ensure the operating temperature of these chips remain low.

2.8.3 Power Consumption

Table 2-4 shows the power consumption parameters for the WSB-9154 running with a 3.4GHz Intel® Pentium® 4 processor through an 80MHz FSB and with 2GB of 533MHz DDR2 memory.

Voltage	Current
+5V	3.86A
+12V	5.21A

Table 2-4: Power Consumption

2.9 Expansion Options

2.9.1 Expansion Options Overview

A number of compatible IEI Technology Corp. PICMG 1.0 backplanes and chassis can be used to develop and expanded the system.

2.9.2 IEI Expansion PICMG 1.0 Backplanes

The backplanes listed in **Table 2-5** are compatible with the WSB-9154 and can be used to develop highly integrated industrial applications. All of the backplanes listed below have 24-pin ATX connector and a 4-pin ATX connector. For more information about these backplanes please consult the IEI catalog or contact your vendor, reseller or the IEI sales team at sales@iei.com.tw.

Model	Total Slots	System	Expansion Slots		PSU Type	System Type	IEI Compatible Chassis	Chassis Type
			PCI	ISA				
PCI-4S-RS-R31	4	One	3	1	AT/ATX	Single	PAC-42GF-R20	wall-mount
PCI-5S-RS-R31	5	One	3	2	AT/ATX	Single	-	-
PCI-5S2A-RS-R10	5	One	4	1	AT	Single	RACK-500G-R20	4U Rack
PCI-6S-RS-R31	6	One	4	2	AT/ATX	Single	PAC-106G-R20 PAC-107G-R20 PAC-1000G	wall-mount
PCI-7S-RS-R30	7	One	4	3	AT/ATX	Single	PAC-1700G	wall-mount
PCI-8S-RS-R30	8	One	4	4	AT/ATX	Single	-	-
PX-8S-RS-R30	8	One	6	2	AT/ATX	Single	-	-
PCI-10S-RS-R30	10	One	4	5	AT/ATX	Single	PAC-125G-R20 RACK-900G	wall-mount & 4U Rack

Model	Total Slots	System	Expansion Slots		PSU Type	System Type	IEI Compatible Chassis	Chassis Type
			PCI	ISA				
PX-10S-RS-R30	10	One	7	3	AT/ATX	Single	PAC-125G-R20	wall-mount
PCI-10S2-RS-R30	10	One	4	5	AT/ATX	Single	RACK-900G	4U Rack
PCI-12S-RS-R30	12	One	4	7	AT/ATX	Single	RACK-814G-R20 RACK-3000G-R20	4U Rack
PCI-13SD-RS-R30	13	Two	3+4	3+3	AT/ATX	Dual	RACK-305G-R20 RACK-360G-R20 RACK-814G-R20 RACK-3000G-R20	4U Rack
PCI-14S-RS-R30	14	One	4	9	AT/ATX	Single	RACK-814G-R20	4U Rack
PCI-14S2-RS-R31	14	One	4	8	AT/ATX	Single	RACK-305G-R20 RACK-360G-R20 RACK-814G-R20 RACK-3000G-R20	4U Rack
PCI-14S3-RS-R30	14	One	4	9	AT/ATX	Single	RACK-305G-R20 RACK-360G-R20 RACK-814G-R20 RACK-3000G-R20	4U Rack
PX-18SQ-RS-R30	18	One	12	2	AT/ATX	Single	RACK-4000B	4U Rack
PX-14S2-RS-R30	14	One	7	6	AT/ATX	Single	RACK-814G RACK-3000G	4U Rack
PX-14S3-RS-R30	14	One	12	2	AT/ATX	Single	RACK-305G RACK-360G RACK-814G RACK-3000G	4U Rack
PX-14S5-RS-R30	14	One	7	6	AT/ATX	Single	RACK-305G RACK-360G RACK-814G RACK-3000G	4U Rack
PCI-19S-RS-R30	19	One	4	14	AT/ATX	Single	RACK-3200G RACK-3035G	4U Rack

Model	Total Slots	System	Expansion Slots		PSU Type	System Type	IEI Compatible Chassis	Chassis Type
			PCI	ISA				
PX-20S2-RS-R31	20	One	17	3	AT/ATX	Single	RACK-3200G RACK-3035G	4U Rack
PX-20S3-RS-R31	20	One	18	1	AT/ATX	Single	RACK-3200G RACK-3035G	4U Rack
PCI-2SD2-RS-R30	2	One	-	R2	AT/ATX	Single	RACK-1150G RACK-1151G	2U Rack
PCI-5SD5-RS-R30	6	One	L2+R2	-	AT	Single	RACK-220G RACK-2000G	2U Rack
PCI-5SD6-RS-R30	6	One	L2+R2	-	ATX	Single	RACK-220G RACK-2000G	2U Rack
PCI-5SDA-RS-R30	6	One	L2+R2	-	AT/ATX	Single	RACK-220G RACK-2000G	2U Rack
PCI-6SD-RS-R30	6	One	L1+R1	L1+R1	ATX	Single	RACK-220G RACK-2000G	2U Rack

Table 2-5: Compatible IEI PICMG 1.0 Backplanes

2.9.3 IEI Chassis

IEI chassis available for WSB-9154 system development are listed in **Table 2-6**.

For more information about these chassis please consult the IEI catalog or contact your vendor, reseller or the IEI sales team at sales@iei.com.tw.

Model	Slot SBC	Mounting	Max Slots	Backplanes
PAC-42GF-R20	Full-size	Wall	4	PCI-4S-RS-R31
PAC-106G-R20	Full-size	Wall	6	PCI-6S-RS-R31
PAC-107G-R20	Full-size	Wall	6	PCI-6S-RS-R31
PAC-125G-R20	Full-size	Wall	10	PCI-10S-RS-R30
PAC-1700G-R20	Full-size	Wall	7	PCI-7S-RS-R30
PAC-1000G	Full-size	Wall	6	PCI-6S-RS-R31

Model	Slot SBC	Mounting	Max Slots	Backplanes
RACK-305G	Full-size (4U)	Rack	14	PCI-14S3-RS-R30 PX-14S3-RS-R30 PX-14S5-RS-R30
RACK-305G-R20	Full-size (4U)	Rack	14	PCI-13SD-RS-R30 PCI-14S2-RS-R31
RACK-360G	Full-size (4U)	Rack	14	PCI-14S3-RS-R30 PX-14S3-RS-R30 PX-14S5-RS-R30
RACK-360G-R20	Full-size (4U)	Rack	14	PCI-13SD-RS-R30 PCI-14S2-RS-R31
RACK-500G-R20	Full-size (5U)	Rack	5	PCI-5S2A-RS-R10
RACK-814G	Full-size (4U)	Rack	14	PCI-14S3-RS-R30 PX-14S2-RS-R30 PX-14S3-RS-R30 PX-14S5-RS-R30
RACK-814G-R20	Full-size (4U)	Rack	14	PCI-12S-RS-R30 PCI-13SD-RS-R30 PCI-14S-RS-R30 PCI-14S2-RS-R31
RACK-900G	Full-size (5U)	Wall	10	PCI-10S-RS-R30 PCI-10S2-RS-R30
RACK-1150G	Full-size (1U)	Rack	3	PCI-2SD2-RS-R30
RACK-1151G	Full-size (1U)	Rack	3	PCI-2SD2-RS-R30
RACK-3000G	Full-size (4U)	Rack	14	PCI-14S3-RS-R30 PX-14S2-RS-R30 PX-14S3-RS-R30 PX-14S5-RS-R30
RACK-3000G-R20	Full-size (4U)	Rack	14	PCI-12S-RS-R30 PCI-13SD-RS-R30 PCI-14S2-RS-R31
RACK-3035G	Full-size (7U)	Rack	20	PCI-19S-RS-R30 PX-20S2-RS-R31

Model	Slot SBC	Mounting	Max Slots	Backplanes
				PX-20S3-RS-R31
RACK-3200G	Full-size (4U)	Rack	20	PCI-19S-RS-R30 PX-20S2-RS-R31 PX-20S3-RS-R31
RACK-4000B	Full-size (4U)	Rack	8	PX-18SQ-RS-R30
RACK-220G	Full-size (2U)	Rack	6	PCI-5SD5-RS-R30 PCI-5SD6-RS-R30 PCI-5SDA-RS-R30 PCI-6SD-RS-R30
RACK-2000G	Full-size (2U)	Rack	6	PCI-5SD5-RS-R30 PCI-5SD6-RS-R30 PCI-5SDA-RS-R30 PCI-6SD-RS-R30

Table 2-6: Compatible IEI Chassis

Chapter

3

Unpacking

3.1 Anti-static Precautions

WARNING!

Failure to take ESD precautions during the installation of the WSB-9154 may result in permanent damage to the WSB-9154 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the WSB-9154. Dry climates are especially susceptible to ESD. It is critical that the following anti-static precautions are strictly adhered to whenever handling the WSB-9154 or any other electrical component.

- ***Wear an anti-static wristband*** - Wearing a simple anti-static wristband can help to prevent ESD from damaging the WSB-9154.
- ***Self-grounding*** - Touch a grounded conducting material before handling and periodically while handling the WSB-9154.
- ***Use an anti-static pad*** - When configuring the WSB-9154, place it on an antic-static pad to reduce the possibility of ESD damage.
- ***Only handle the edges of the WSB-9154*** - When handling the WSB-9154, hold it by its edges.

3.2 Unpacking

3.2.1 Unpacking Precautions

When the WSB-9154 is unpacked, please do the following:

- Follow the anti-static precautions outlined in **Section 3.1**.
- Make sure the packing box is facing upwards so the WSB-9154 does not fall out of the box.
- Make sure all the components shown in **Section 3.3** are present.

3.3 Unpacking Checklist

NOTE:

If any components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the WSB-9154 was purchased from or contact an IEI sales representative directly by sending an email to sales@iei.com.tw.

3.3.1 Package Contents

The WSB-9154 is shipped with the following components:

Quantity	Item and Part Number	Image
1	WSB-9154	
1	ATA 66/100 flat cable (P/N: 32200-000052-RS)	
1	KB/MS PS/2 Y-cable (P/N: 32000-000138-RS)	

Quantity	Item and Part Number	Image
1	Double RS-232 cable (P/N: 19800-000051-RS)	
2	SATA cables (P/N: 32000-062800-RS)	
1	SATA power cable (P/N: 32100-088600-RS)	
1	DVI IO kit (**DVI model only**) (P/N: IO-KIT-001-R20)	
1	USB cable (P/N: CB-USB02-RS)	
1	Mini jumper Pack (P/N: 33100-000079-RS)	
1	Quick Installation Guide (P/N: 51000-021969-RS)	
1	Utility CD (P/N: 51100-000112-RS)	

Table 3-1: Package List Contents

3.3.2 Optional Components

The following components are optional:

Item and Part Number	Image
5.1 Channel Audio Kit (P/N: AC-KIT08R-R10)	
7.1 Channel Audio Kit (P/N: AC-KIT-883 HD)	
ATX 12V Power Cable (P/N: 32100-087100-RS)	
CPU cooling kit (P/N: CF-520-RS)	
CPU cooling kit (P/N: CF-775A-RS)	
FDD cable (P/N: 32200-0000-17-RS)	
LPT cable (P/N: 19800-000049-RS)	

Table 3-2: Optional Components

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Chapter

4

Connector Pinouts

4.1 Peripheral Interface Connectors

Section 4.1.1 shows peripheral interface connector locations. **Section 4.1.2** lists all the peripheral interface connectors seen in **Section 4.1.1**.

4.1.1 WSB-9154 Layout

Figure 4-1 shows the on-board peripheral connectors, rear panel peripheral connectors and on-board jumpers.

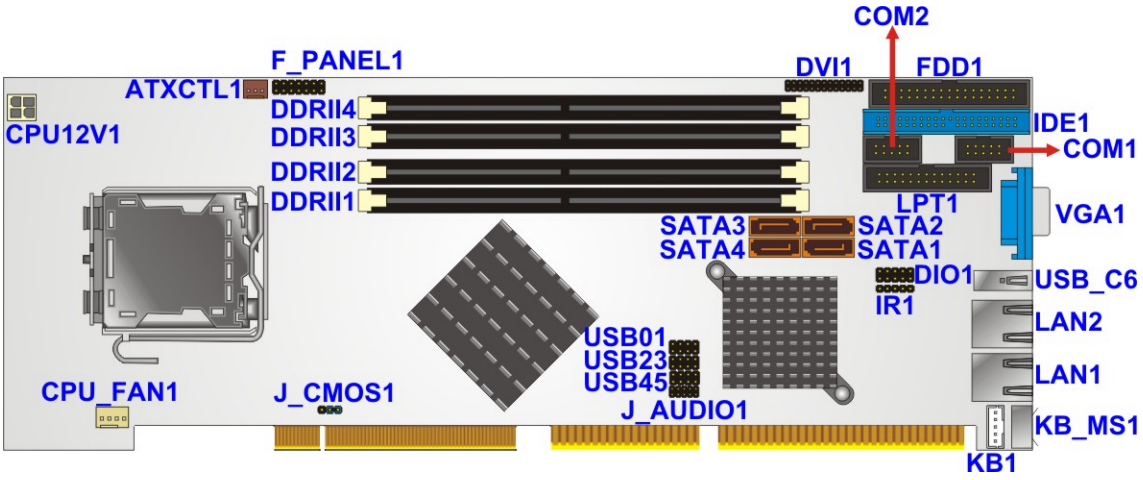

Figure 4-1: Connector and Jumper Locations

4.1.2 Peripheral Interface Connectors

Table 4-1 shows a list of the peripheral interface connectors on the WSB-9154. Detailed descriptions of these connectors can be found below.

Connector	Type	Label
+12V ATX power supply connector	4-pin ATX connector	CPU12V1
ATX power supply enable connector	3-pin wafer	ATXCTL1
Audio connector	10-pin header	J_AUDIO1
Digital I/O connector	10-pin header	DIO1
DVI connector (DVI model only)	14-pin header	DVI1
Fan connector	4-pin wafer	CPU_FAN1
Floppy drive connector	34-pin box header	FDD1
Front panel connector	14-pin header	F_PANEL1
IDE Interface connector	40-pin box header	IDE1
Infrared connector	5-pin header	IR1
Keyboard and mouse connector	5-pin wafer	KB1
Parallel port connector	26-pin box header	LPT1
Serial ATA (SATA) connector	7-pin SATA connector	SATA1
Serial ATA (SATA) connector	7-pin SATA connector	SATA2
Serial ATA (SATA) connector	7-pin SATA connector	SATA3
Serial ATA (SATA) connector	7-pin SATA connector	SATA4
Serial port connector	10-pin box header	COM1
Serial port connector	10-pin box header	COM2
USB connector	8-pin header	USB01
USB connector	8-pin header	USB23
USB connector	8-pin header	USB45

Table 4-1: Peripheral Interface Connectors

4.1.3 External Peripheral Interface Panel Connectors

Table 4-2 lists the external peripheral interface panel connectors on the WSB-9154. Detailed descriptions of these connectors can be found in **Section 4.3**.

Connector	Type	Label
Ethernet connector	RJ-45	LAN1
Ethernet connector	RJ-45	LAN2
Keyboard/Mouse connector	PS/2	KB_MS1
USB port	USB port	USB_C6
VGA port connector	Female DB-15	VGA1

Table 4-2: External Peripheral Interface Panel Connectors

4.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the motherboard and are only accessible when the motherboard is outside of the chassis. This section has complete descriptions of all the internal, peripheral connectors on the WSB-9154.

4.2.1 ATX Power Supply Connector (4-pins)

CN Label: CPU12V1

CN Type: 4-pin ATX power connector (1x4)

CN Location: See Figure 4-2

CN Pinouts: See Table 4-3

The 4-pin ATX power supply connector is connected to a +12V ATX power supply.

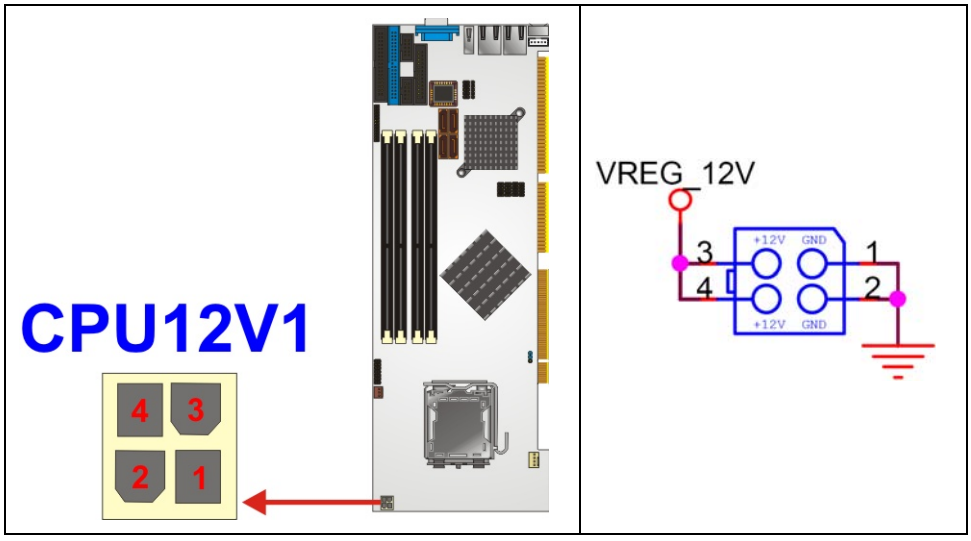

Figure 4-2: ATX Power Supply Connector (4-pins) Location

PIN	DESCRIPTION
1	GND
2	GND
3	+12V
4	+12V

Table 4-3: ATX Power Supply Connector (4-pins) Pinouts

4.2.2 ATX Power Supply Enable Connector

CN Label:	ATXCTL1
CN Type:	3-pin wafer (1x3)
CN Location:	See Figure 4-3
CN Pinouts:	See Table 4-4

The ATX power supply enable connector enables the WSB-9154 to be connected to an ATX power supply. In default mode, the WSB-9154 can only us an AT power supply. To enable an ATX power supply the AT Power Select jumper must also be configured. Please refer to Chapter 3 for more details.

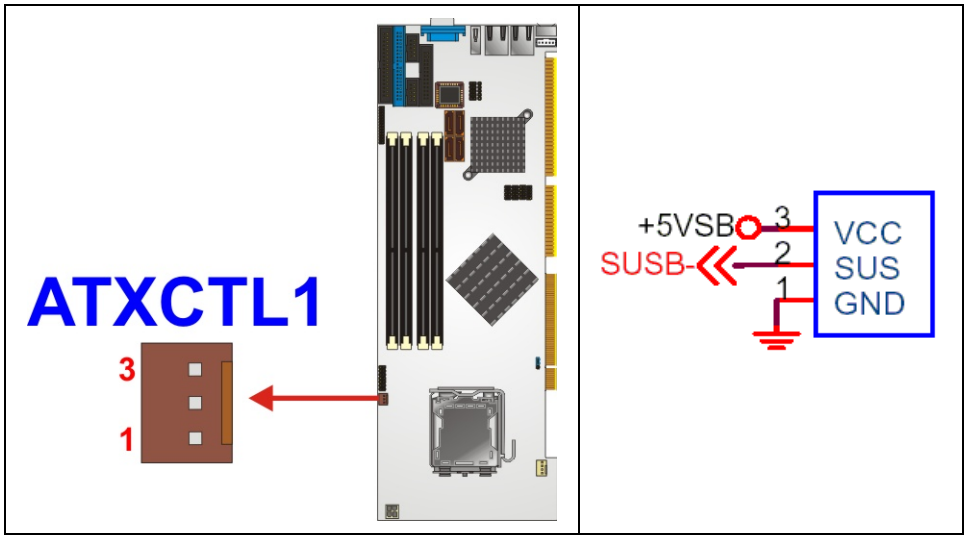

Figure 4-3: ATX Power Supply Enable Connector Location

PIN	DESCRIPTION
1	GND
2	PS-ON
3	+5V Standby

Table 4-4: ATX Power Supply Enable Connector Pinouts

4.2.3 Audio Connector (9-pin)

CN Label: J_AUDIO1

CN Type: 9-pin header

CN Location: See Figure 4-4

CN Pinouts: See Table 4-5

An optional module can be connected to the 10-pin audio connector to provide the system with a high quality AC'97 or Azalia compatible codec that provides a complete integrated audio solution.

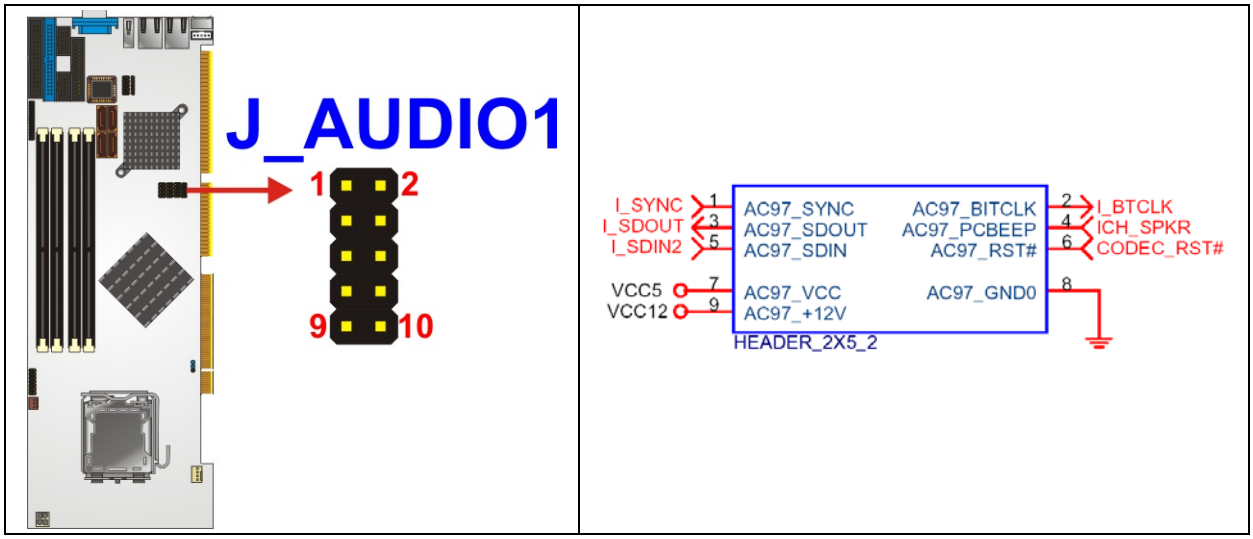

Figure 4-4: Audio Connector Pinouts (9-pin)

PIN	DESCRIPTION	PIN	DESCRIPTION
1	AC97_SYNC	2	AC97_BITCLK
3	AC97_SDOUT	4	AC97_PCBEEP
5	AC97_SDIN	6	AC97_RST#
7	AC97_VCC	8	AC97_GND
9	AC97_12V		

Table 4-5: Audio Connector Pinouts (9-pin)

4.2.4 Digital Input/Output (DIO) Connector

CN Label: DIO1

CN Type: 10-pin header (2x5)

CN Location: See Figure 4-5

CN Pinouts: See Table 4-6

The digital input/output connector is managed through a Super I/O chip. The DIO connector pins are user programmable.

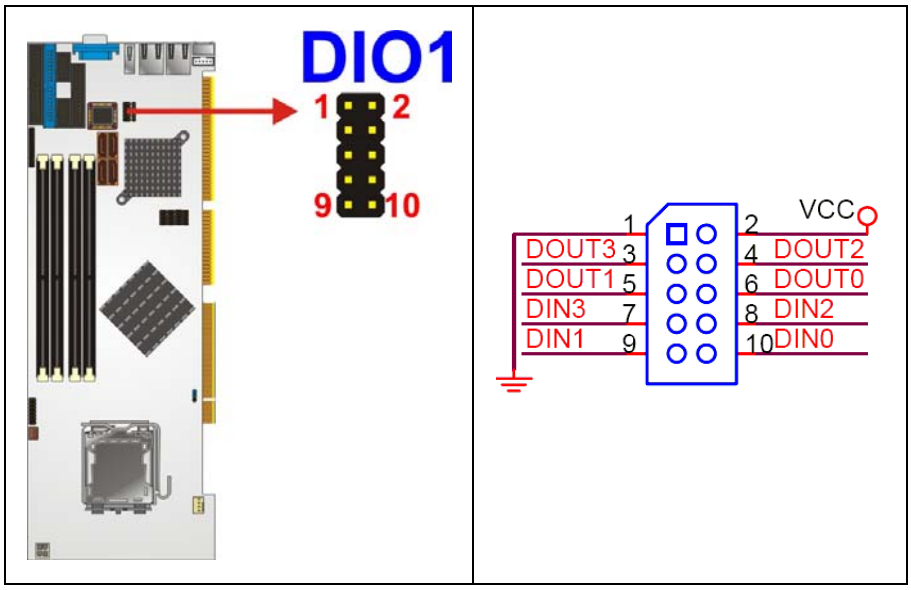

Figure 4-5: DIO Connector Locations

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	2	VCC
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

Table 4-6: DIO Connector Pinouts

4.2.5 Digital Video Interface (DVI) Connector (DVI Model Only)

CN Label: DVI1

CN Type: 26-pin header

CN Location: See **Figure 4-6**

CN Pinouts: See **Table 4-7**

The digital video interface connector is a digital visual interface for a digital display. The optional IO-KIT-001 accessory can be purchased separately.

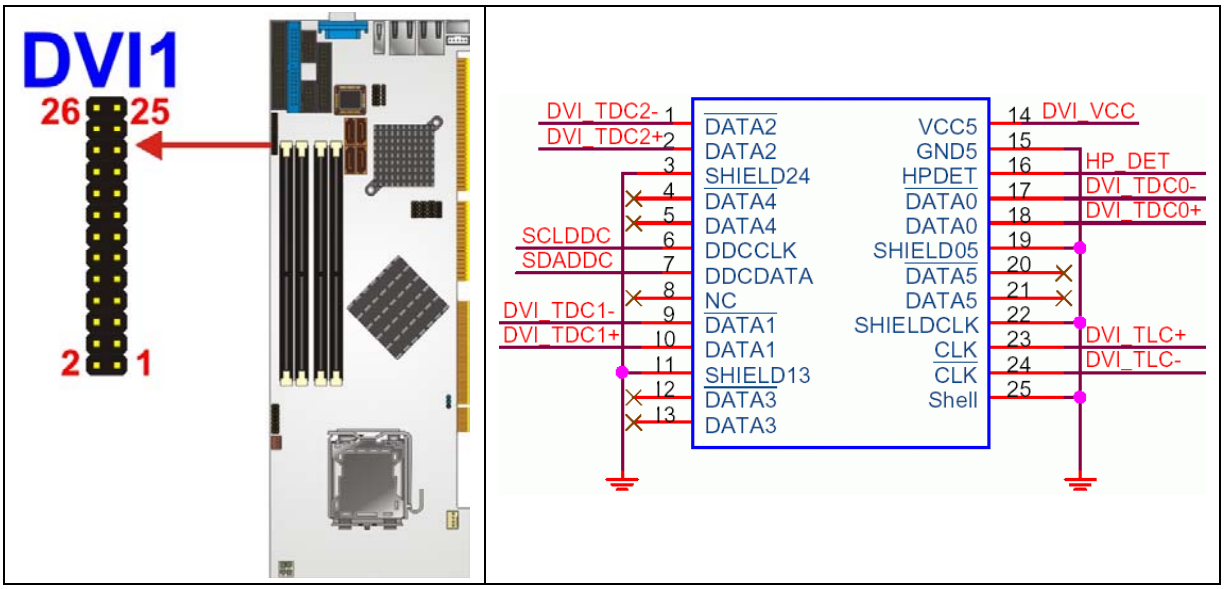

Figure 4-6: DVI Connector Location

PIN	DESCRIPTION	PIN	DESCRIPTION
1	Data 2-	14	+5V Power
2	Data 2+	15	GND
3	GND	16	Hot Plug Detect
4	N/C	17	Data0-
5	N/C	18	Data 0+
6	DDC Clock	19	GND
7	DDC Data	20	N/C
8	N/C	21	N/C
9	Data 1-	22	GND
10	Data 1+	23	Clock+
11	GND	24	Clock-
12	N/C	25	GND
13	N/C	26	

Table 4-7: DVI Connector Pinouts

4.2.6 Fan Connector (+12V)

CN Label: CPU_FAN1

CN Type: 4-pin header

CN Location: See Figure 4-7

CN Pinouts: See Table 4-8

The cooling fan connector provides a 12V, 500mA current to a system cooling fan. The connector has a "rotation" pin to get rotation signals from fans and notify the system so the system BIOS can recognize the fan speed. Please note that only specified fans can issue the rotation signals.

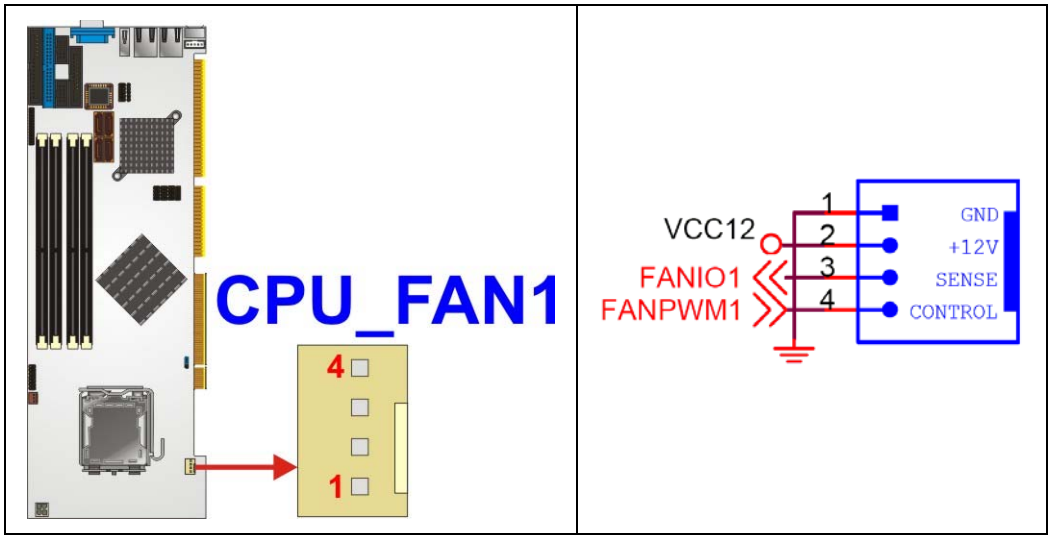

Figure 4-7: Fan Connector Location

PIN	DESCRIPTION
1	Ground
2	+12V
3	Rotation Signal
4	Control

Table 4-8: Fan Connector Pinouts

4.2.7 Floppy Disk Connector (34-pin)

CN Label: FDD1

CN Type: 34-pin header (2x17)

CN Location: See **Figure 4-8**

CN Pinouts: See **Table 4-9**

The floppy disk connector is connected to a floppy disk drive.

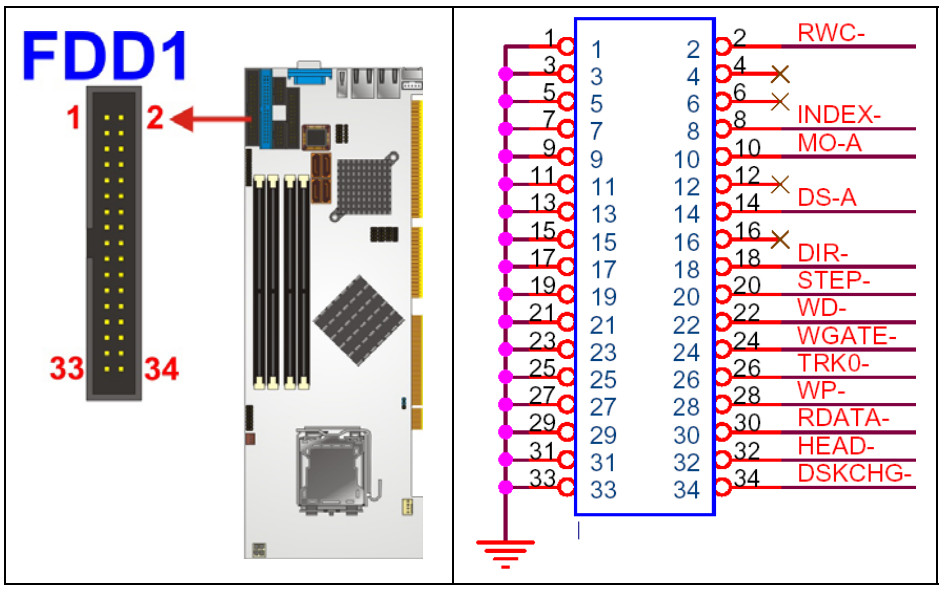

Figure 4-8: FDD Connector Location

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	2	REDUCE WRITE
3	GND	4	N/C
5	N/C	6	N/C
7	GND	8	INDEX#
9	GND	10	MOTOR ENABLE A#
11	GND	12	DRIVE SELECT B#
13	GND	14	DRIVE SELECT A#
15	GND	16	MOTOR ENABLE B#

PIN	DESCRIPTION	PIN	DESCRIPTION
17	GND	18	DIRECTION#
19	GND	20	STEP#
21	GND	22	WRITE DATA#
23	GND	24	WRITE GATE#
25	GND	26	TRACK 0#
27	GND	28	WRITE PROTECT#
29	GND	30	READ DATA#
31	GND	32	SIDE 1 SELECT#
33	GND	34	DISK CHANGE#

Table 4-9: FDD Connector Pinouts

4.2.8 Front Panel Connector (14-pin)

CN Label: F_PANEL1

CN Type: 14-pin header (2x6)

CN Location: See Figure 4-9

CN Pinouts: See Table 4-10

The front panel connector connects to external switches and indicators to monitor and controls the motherboard. These indicators and switches include:

- Power button
- Reset button
- Power LED
- HDD LED

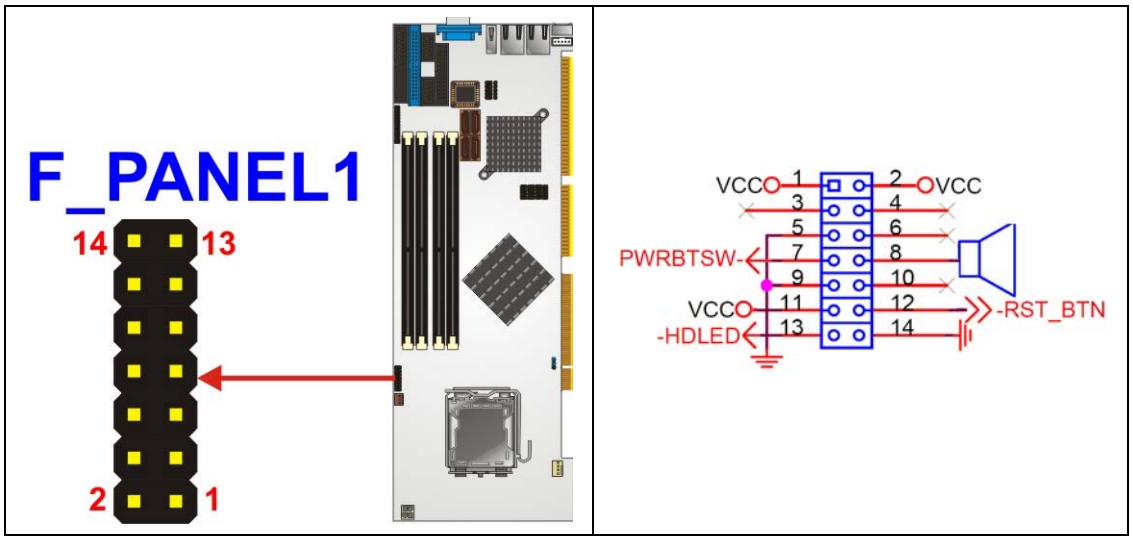

Figure 4-9: Front Panel Connector Pinout Locations

FUNCTION	PIN	DESCRIPTION	FUNCTION	PIN	DESCRIPTION
Power LED	1	+5V	Speaker	2	+5V
	3	N/C		4	N/C
	5	Ground		6	N/C
Power Button	7	PWRBTN-		8	Speaker
	9	GND	Reset	10	N/C
HDD LED	11	+5V		12	Reset-
	13	HDD LED-		14	GND

Table 4-10: Front Panel Connector Pinouts

4.2.9 IDE Connector(40-pin)

CN Label: IDE1

CN Type: 40-pin header (2x20)

CN Location: See Figure 4-10

CN Pinouts: See Table 4-11

One 40-pin IDE device connector on the WSB-9154 supports connectivity to two hard disk drives.

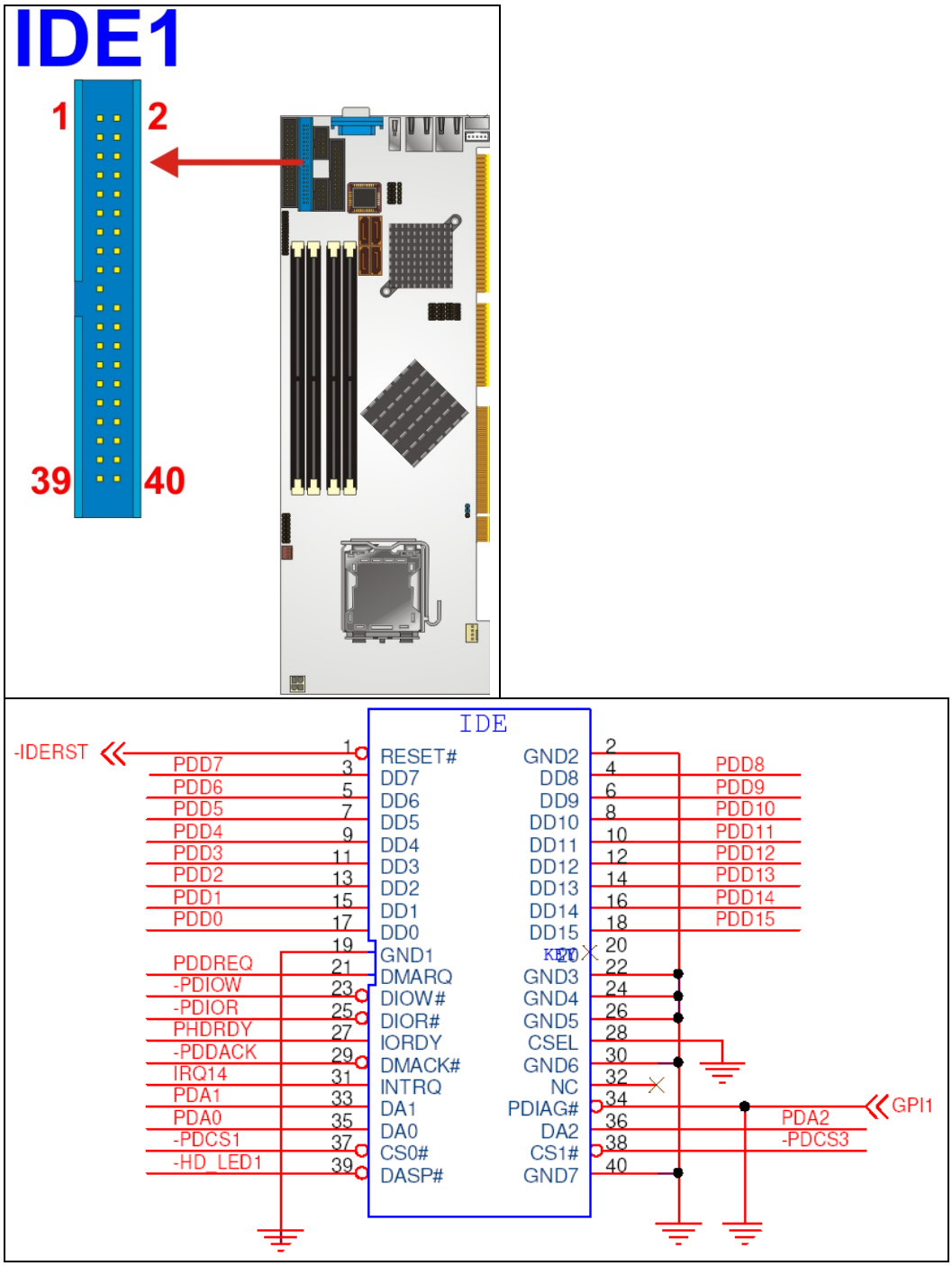

Figure 4-10: IDE Device Connector Locations

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RESET#	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N/C
21	IDE DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	IDE CHRDY	28	GROUND
29	IDE DACK	30	GROUND–DEFAULT
31	INTERRUPT	32	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND

Table 4-11: IDE Device Connector Pinouts

4.2.10 Infrared Interface Connector (5-pin)

CN Label: IR1

CN Type: 5-pin header (1x5)

CN Location: See Figure 4-11

CN Pinouts: See Table 4-12

The infrared interface connector supports both Serial Infrared (SIR) and Amplitude Shift Key Infrared (ASKIR) interfaces.

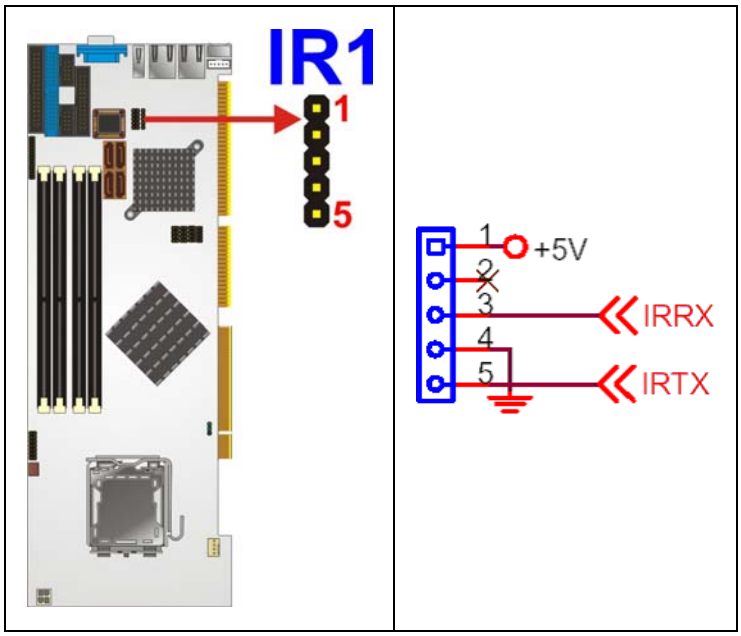

Figure 4-11: Infrared Connector Pinout Locations

PIN	DESCRIPTION
1	VCC
2	NC
3	IR-RX
4	GND
5	IR-TX

Table 4-12: Infrared Connector Pinouts

4.2.11 Keyboard Connector

CN Label: KB1

CN Type: 5-pin wafer (1x5)

CN Location: See Figure 4-12

CN Pinouts: See Table 4-13

The keyboard connector can be connected to a standard PS/2 cable to add keyboard functionality to the system.

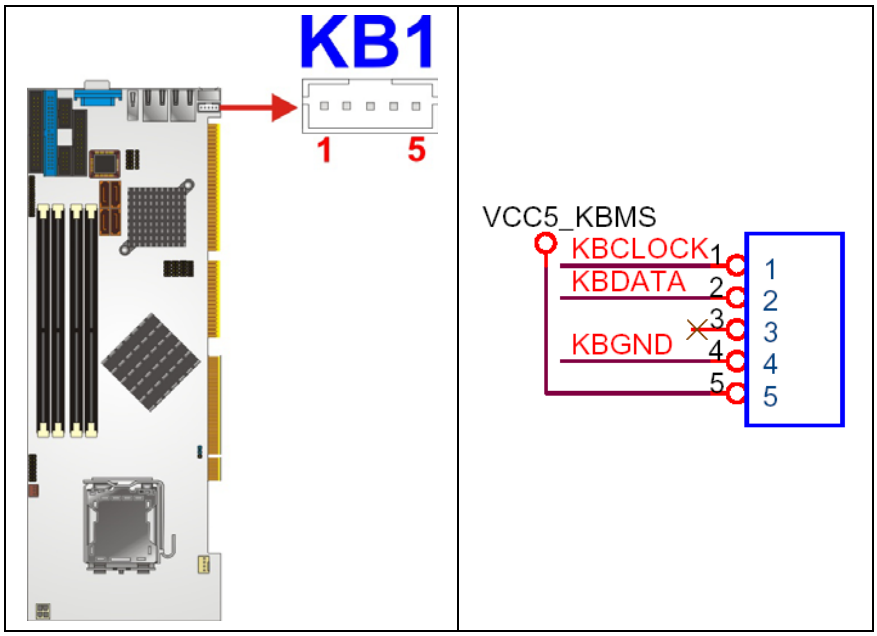

Figure 4-12: Keyboard Connector Location

PIN	DESCRIPTION
1	KEYBOARD CLOCK
2	KEYBOARD DATA
3	N/C
4	GROUND
5	VCC

Table 4-13: Keyboard Connector Pinouts

4.2.12 Parallel Port Connector

CN Label: LPT1

CN Type: 26-pin box header

CN Location: See Figure 4-13

CN Pinouts: See Table 4-14

The 26-pin parallel port connector connects to a parallel port connector interface or some other parallel port device such as a printer.

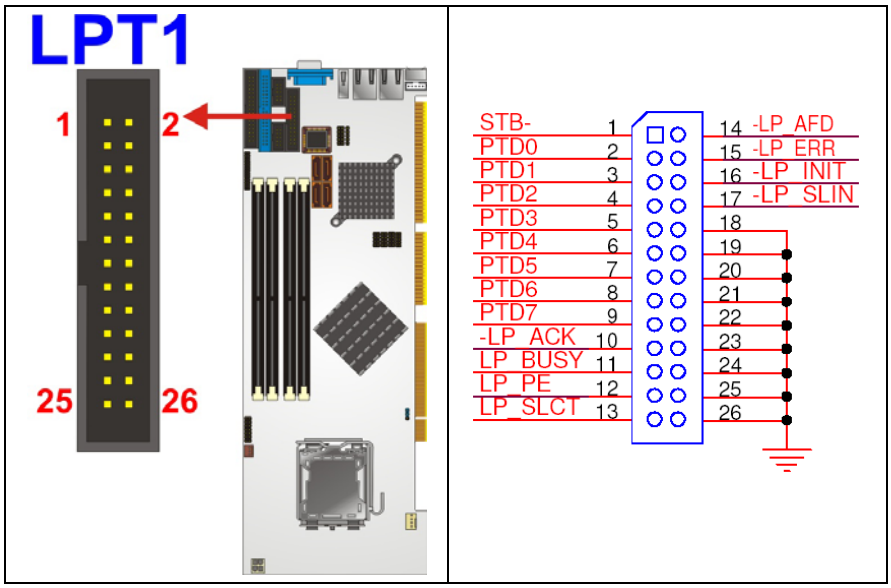

Figure 4-13: Parallel Port Connector Location

PIN	DESCRIPTION	PIN	DESCRIPTION
1	STROBE#	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GROUND
19	GROUND	20	GROUND
21	GROUND	22	GROUND
23	GROUND	24	GROUND
25	GROUND	26	NC

Table 4-14: Parallel Port Connector Pinouts

4.2.13 SATA Drive Connectors

CN Label: SATA1, SATA2, SATA3 and SATA4

CN Type: 7-pin SATA drive connectors

CN Location: See Figure 4-14

CN Pinouts: See Table 4-15

The four SATA drive connectors are each connected to a second generation SATA drive. Second generation SATA drives transfer data at speeds as high as 300Mb/s. The SATA drives can be configured in a RAID configuration.

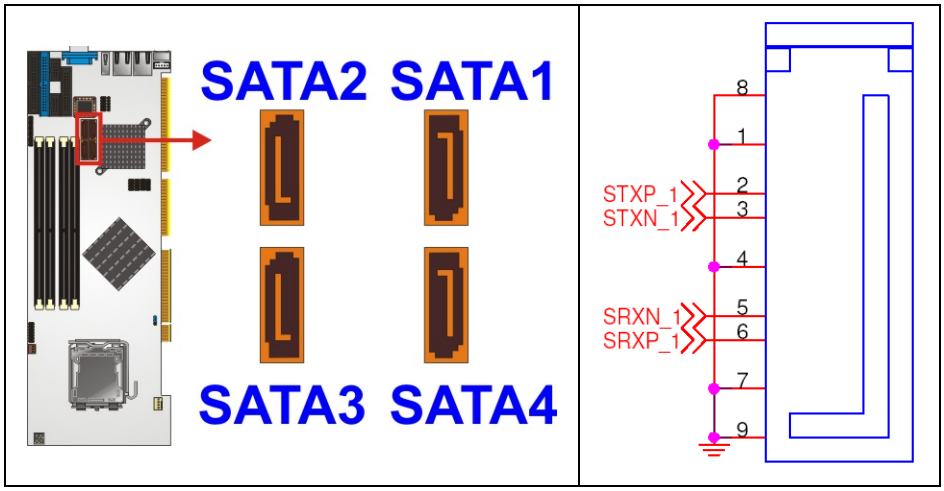

Figure 4-14: SATA Drive Connector Locations

PIN	DESCRIPTION
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

Table 4-15: SATA Drive Connector Pinouts

4.2.14 Serial Port Connectors

CN Label: COM1 and COM2

CN Type: 10-pin box header (2x5)

CN Location: See Figure 4-15

CN Pinouts: See Table 4-16

The 10-pin serial port connector provides a second RS-232 serial communications channel. The serial port connectors can be connected to external RS-232 serial port devices.

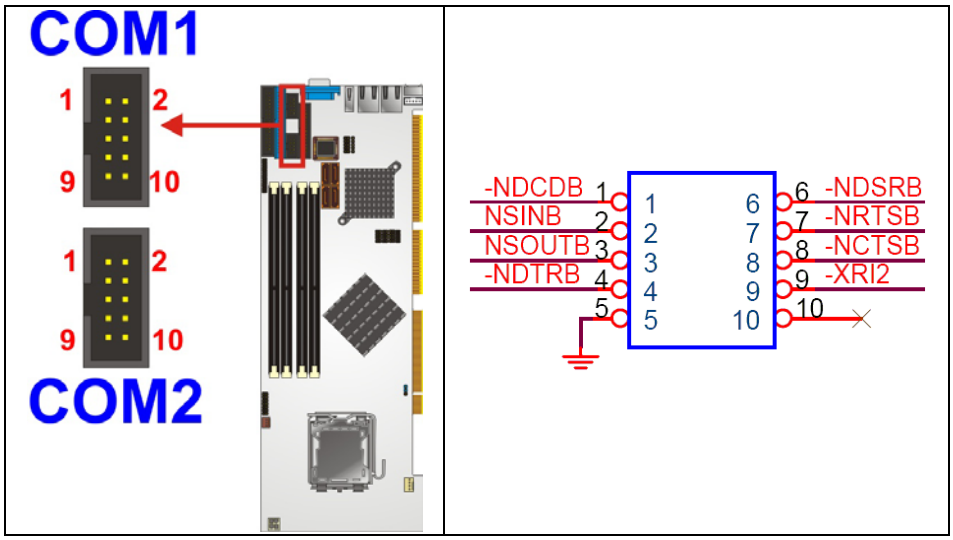

Figure 4-15: Serial Port Connectors Pinout Locations

PIN	DESCRIPTION	PIN	DESCRIPTION
1	Data Carrier Detect (DCD)	2	Receive Data (RXD)
3	Transmit Data (TXD)	4	Data Terminal Ready (DTR)
5	Ground (GND)	6	Data Set to Ready (DSR)
7	Request to Send (RTS)	8	Clear to Sent (CTS)
9	Ring Indicator (RI)	10	N/C

Table 4-16: Serial Port Connectors Pinouts

4.2.15 USB Connectors (Internal)

CN Label:	USB01, USB23 and USB45
CN Type:	8-pin header (2x4)
CN Location:	See Figure 4-16
CN Pinouts:	See Table 4-17

The 2x4 USB pin connectors each provide connectivity to two USB 1.1 or two USB 2.0 ports. Each USB connector can support two USB devices.. Additional external USB ports are found on the rear panel. The USB ports are used for I/O bus expansion.

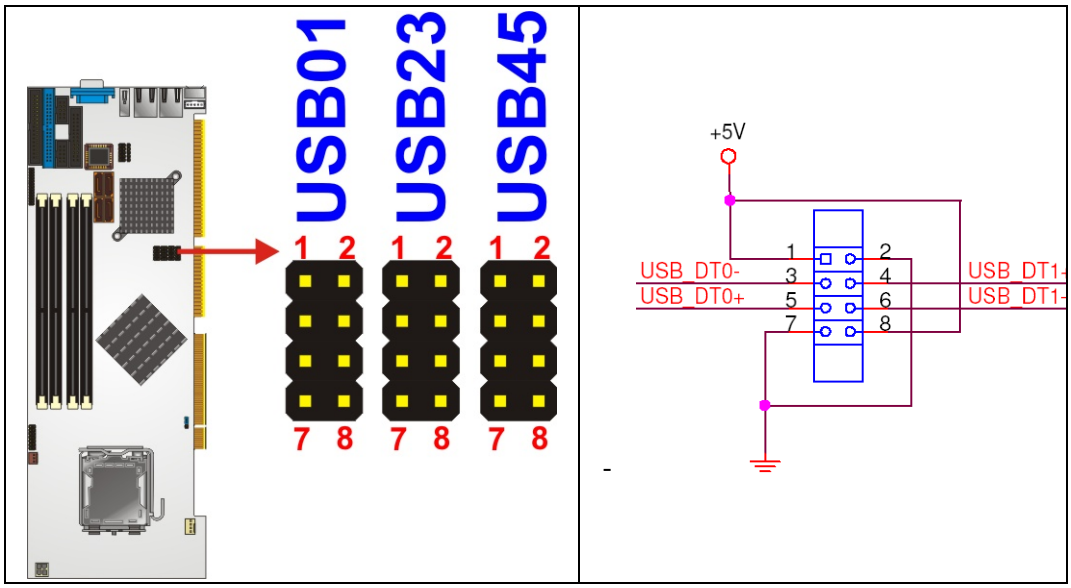

Figure 4-16: USB Connector Pinout Locations

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC	2	GND
3	DATAN-	4	DATA1M-
5	DATAN+	6	DATAM+
7	GND	8	VCC

Table 4-17: USB Port Connector Pinouts

4.3 External Peripheral Interface Connector Panel

Figure 4-17 shows the WSB-9154 rear panel. The WSB-9154 rear panel consists of two RJ-45 Ethernet connectors, a PS/2 keyboard connector a USB port and a VGA connector. These connectors are accessible when the WSB-9154 is installed in a chassis.

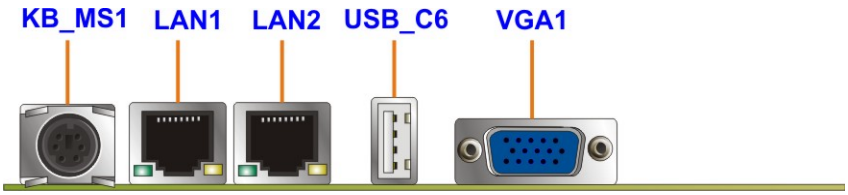

Figure 4-17: WSB-9154 External Peripheral Interface Connector

4.3.1 Keyboard/Mouse Connector

CN Label: KB_MS1

CN Type: PS/2

CN Location: See **Figure 4-17**

CN Pinouts: See **Figure 4-18** and **Table 4-18**

The WSB-9154 keyboard and mouse connector is a standard PS/2 connector.

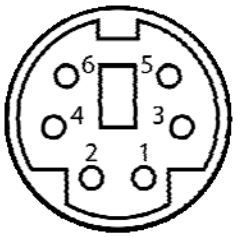

Figure 4-18: PS/2 Pinout and Configuration

PIN	DESCRIPTION
1	KB DATA
2	MS DATA
3	GND
4	VCC
5	KB CLOCK
6	MS CLOCK

Table 4-18: Keyboard Connector Pinouts

4.3.2 LAN Connectors

CN Label: LAN1 and LAN2

CN Type: RJ-45

CN Location: See Figure 4-17

CN Pinouts: See Table 4-19

The WSB-9154 has two built-in GbE Ethernet controllers. The controllers can connect to the LAN through two RJ-45 LAN connectors. There are two LEDs on the connector indicating the status of LAN. The pin assignments are listed in the following table:

PIN	DESCRIPTION	PIN	DESCRIPTION
1	TXA+	5	TXC-
2	TXA-	9	TXB-
3	TXB+	10	TXD+
4	TXC+	11	TXD-

Table 4-19: LAN Pinouts

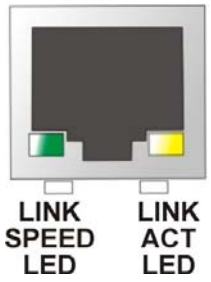

Figure 4-19: RJ-45 Ethernet Connector

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked. See Table 4-20.

STATUS	DESCRIPTION	STATUS	DESCRIPTION
GREEN	Activity	YELLOW	Linked

Table 4-20: RJ-45 Ethernet Connector LEDs

4.3.3 USB Connector

CN Label: USB_C6

CN Type: USB port

CN Location: See Figure 4-17 and Figure 4-20

CN Pinouts: See Table 4-21

The WSB-9154 has a one external USB 2.0 port. The port connects to both USB 2.0 and USB 1.1 devices.

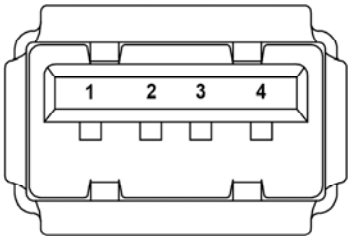

Figure 4-20: USB Connector Pinout Locations

PIN	DESCRIPTION
1	VCC
2	DATA-
3	DATA+
4	GND

Table 4-21: USB Port Pinouts

4.3.4 VGA Connector

CN Label: VGA1

CN Type: 15-pin Female

CN Location: See Figure 4-17

CN Pinouts: See Figure 4-21 and Table 4-22

The WSB-9154 has a single 15-pin female connector for connectivity to standard display devices.

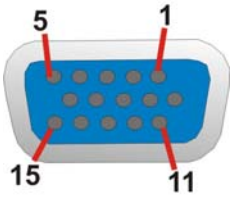

Figure 4-21: VGA Connector

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC / NC	10	GND
11	NC	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDCCLK		

Table 4-22: VGA Connector Pinouts

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Chapter

5

Installation

5.1 Anti-static Precautions

WARNING!

Failure to take ESD precautions during the installation of the WSB-9154 may result in permanent damage to the WSB-9154 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the WSB-9154. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the WSB-9154, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***:- Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring the WSB-9154, place it on an antic-static pad. This reduces the possibility of ESD damaging the WSB-9154.
- ***Only handle the edges of the PCB***:-: When handling the PCB, hold the PCB by the edges.

5.2 Installation Considerations

NOTE:

The following installation notices and installation considerations should be read and understood before the WSB-9154 is installed. All installation notices pertaining to the installation of the WSB-9154 should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the WSB-9154 and injury to the person installing the motherboard.

5.2.1 Installation Notices

WARNING!

The installation instructions described in this manual should be carefully followed in order to prevent damage to the WSB-9154, WSB-9154 components and injury to the user.

Before and during the installation please **DO** the following:

- Read the user manual:
  - The user manual provides a complete description of the WSB-9154 installation instructions and configuration options.
- Wear an electrostatic discharge cuff (ESD):
  - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- Place the WSB-9154 on an antistatic pad:
  - When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- Turn all power to the WSB-9154 off:

- When working with the WSB-9154, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the WSB-9154 **DO NOT:**

- Remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- Use the product before verifying all the cables and power connectors are properly connected.
- Allow screws to come in contact with the PCB circuit, connector pins, or its components.

5.2.2 Installation Checklist

The following checklist is provided to ensure the WSB-9154 is properly installed.

- All the items in the packing list are present
- The CPU is installed
- The CPU cooling kit is properly installed
- A compatible memory module is properly inserted into the slot
- The CF Type I or CF Type II card is properly installed into the CF socket
- The jumpers have been properly configured
- The WSB-9154 is inserted into a chassis with adequate ventilation
- The correct power supply is being used
- The following devices are properly connected
  - IDE device
  - SATA drives
  - Keyboard and mouse cable
  - Audio kit
  - Power supply
  - USB cable
  - Serial port cable
  - Parallel port cable
- The following external peripheral devices are properly connected to the chassis:
  - VGA screen

- USB device
- LAN connection

5.3 CPU, CPU Cooling Kit and DIMM Installation

WARNING!

A CPU should never be turned on without the specified cooling kit being installed. If the cooling kit (heat sink and fan) is not properly installed and the system turned on, permanent damage to the CPU, WSB-9154 and other electronic components attached to the system may be incurred. Running a CPU without a cooling kit may also result in injury to the user.

The CPU, CPU cooling kit and DIMM are the most critical components of the WSB-9154. If one of these component is not installed the WSB-9154 cannot run.

5.3.1 LGA775 CPU Installation

NOTE:

Enabling Hyper-Threading Technology on your system requires meeting all of the platform requirements listed below:

- **CPU**: An LGA775 Intel® Pentium® 4/ Pentium® D CPU must be installed
- **Chipset**: An Intel® Chipset that supports HT Technology (that has been met by the WSB-9154)
- **OS**: An operating system that has optimizations for HT Technology

WARNING!

CPUs are expensive and sensitive components. When installing the CPU please be careful not to damage it in anyway. Make sure the CPU is installed properly and ensure the correct cooling kit is properly installed.

The LGA775 socket is shown in Figure 5-1.

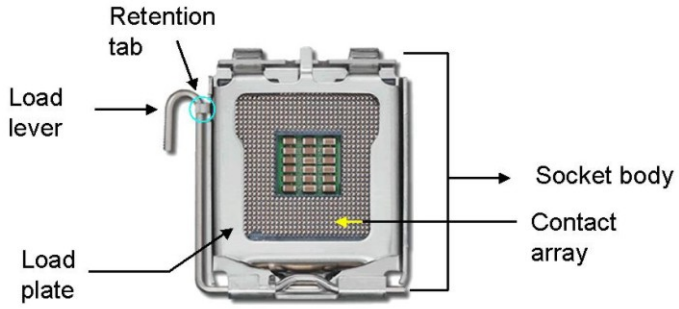

Figure 5-1: Intel LGA775 Socket

To install an LGA775 CPU onto the WSB-9154, follow the steps below:

WARNING!

When handling the CPU, only hold it on the sides. DO NOT touch the pins at the bottom of the CPU.

Step 1: **Remove the protective cover.** Remove the black protective cover by prying it off the load plate. To remove the protective cover, locate the "**REMOVE**" sign and use your fingernail to pry the protective cover off. See **Figure 5-2**.

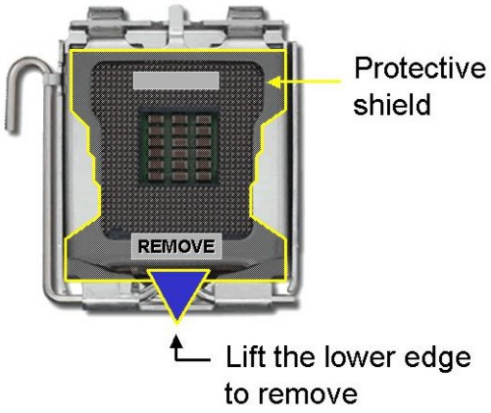

Figure 5-2: Remove the CPU Socket Protective Shield

Step 2: **Open the socket**. Disengage the load lever by pressing the lever down and slightly outward to clear the retention tab. Rotate the load lever to a fully open position. Then rotate the load plate towards the opposite direction.

See **Figure 5-3**.

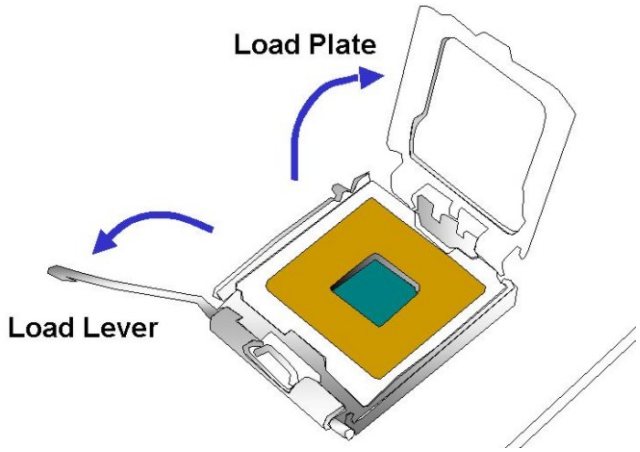

Figure 5-3: Open the CPU Socket Load Plate

Step 3: **Inspect the CPU socket** Make sure there are no bent pins and make sure the socket contacts are free of foreign material. If any debris is found, remove it with compressed air.

Step 4: **Orientate the CPU properly**. Make sure the IHS (Integrated Heat Sink) side is facing upward.

Step 5: **Correctly position the CPU.** Match the Pin 1 mark with the cut edge on the CPU socket.

Step 6: **Align the CPU pins.** Locate pin 1 and the two orientation notches on the CPU. Carefully match the two orientation notches on the CPU with the socket alignment keys.

Step 7: **Insert the CPU.** Gently insert the CPU into the socket. If the CPU pins are properly aligned, the CPU should slide into the CPU socket smoothly.
See **Figure 5-4**.

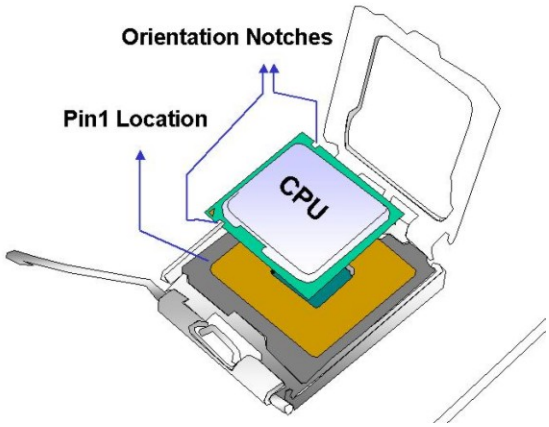

Figure 5-4: Insert the Socket LGA775 CPU

Step 8: **Close the CPU socket.** Close the load plate and engage the load lever by pushing it back to its original position. Secure the load lever under the retention tab on the side of CPU socket.

Step 9: **Connect the CPU 12V cable to the 12After the cooling kit is installed** connect the CPU cable to the CPU 12V power connector.

5.3.2 LGA775 Cooling Kit Installation

WARNING!

It is strongly recommended that you DO NOT use the original heat sink and cooler provided by Intel on the WSB-9154.

IEI's LGA775 cooling kits (CF-775A-RS and CF-520) include a support bracket that is combined with the heat sink mounted on the CPU to counterweigh and balance the load on both sides of the PCB.

CF-775A-RS

CF-520

Figure 5-5: IEI CF-520 Cooling Kit

An IEI LGA775 CPU cooling kits shown in **Figure 5-5** can be purchased separately. The cooling kits comprise a CPU heat sink and a cooling fan.

WARNING!

Do not wipe off (accidentally or otherwise) the pre-sprayed layer of thermal paste on the bottom of the [Fan model#] heat sink. The thermal paste between the CPU and the heat sink is important for optimum heat dissipation.

Follow the steps below to install a cooling kit.

Step 1: **Place the cooling kit onto the socket LGA775 CPU**. Make sure the CPU cable can be properly routed when the cooling kit is installed.

Step 2: **Properly align the cooling kit**. Make sure the four spring screw fasteners can pass through the pre-drilled holes on the PCB.

Step 3: **Mount the cooling kit**. Gently place the cooling kit on top of the CPU. Make sure the four threaded screws on the corners of the cooling kit properly pass through the predrilled holes on the bottom of the PCB.

Step 4: **Secure the cooling kit**. From the solder side of the PCB, align the support bracket to the screw threads on heat sink that were inserted through the PCB holes. (See **Figure 5-6**)

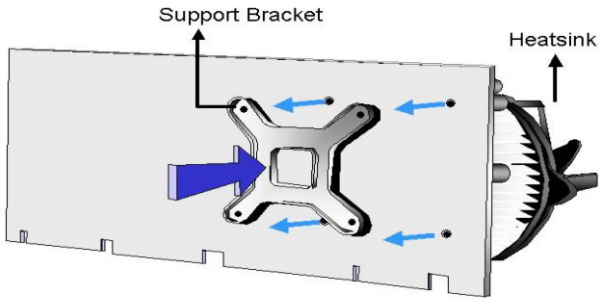

Figure 5-6: Securing the Heat sink to the PCB Board

Step 5: **Tighten the screws**. Use a screwdriver to tighten the four screws. Tighten each nut a few turns at a time and do not over-tighten the screws.

Step 6: **Connect the fan cable**. Connect the cooling kit fan cable to the fan connector on the WSB-9154. Carefully route the cable and avoid heat generating chips and fan blades.

5.3.3 DIMM Installation

WARNING!

Using incorrectly specified DIMM may cause permanent damage the WSB-9154. Please make sure the purchased DIMM complies with the memory specifications of the WSB-9154. DIMM specifications compliant with the WSB-9154 are listed in **Chapter 2**.

To install a DIMM into a DIMM socket, please follow the steps below and refer to **Figure 5-7**.

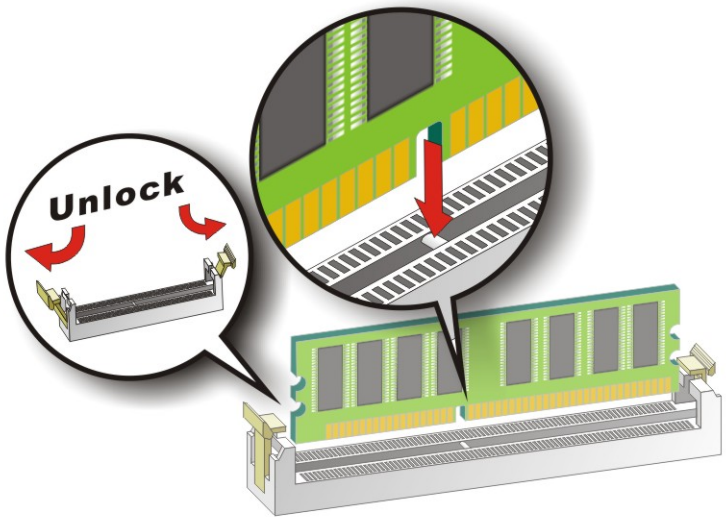

Figure 5-7: Installing a DIMM

Step 1: **Open the DIMM socket handles**. The DIMM socket has two handles that secure the DIMM into the socket. Before the DIMM can be inserted into the socket, the handles must be opened. See **Figure 5-7**.

Step 2: **Align the DIMM with the socket**. The DIMM must be oriented in such a way that the notch in the middle of the DIMM must be aligned with the plastic bridge in the socket. See **Figure 5-7**.

Step 3: **Insert the DIMM**. Once properly aligned, the DIMM can be inserted into the socket. As the DIMM is inserted, the white handles on the side of the socket will close automatically and secure the DIMM to the socket. See **Figure 5-7**.

Step 4: **Removing a DIMM**. To remove a DIMM, push both handles outward. The memory module is ejected by a mechanism in the socket.

5.4 Jumper Settings

NOTE:

A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.

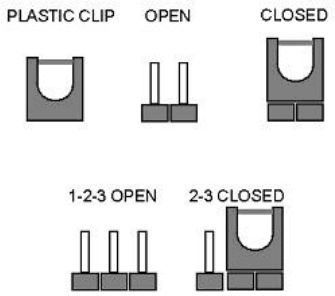

Figure 5-8: Jumpers

Before the WSB-9154 is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the WSB-9154 are listed in **Table 5-1**.

Description	Label	Type
Clear CMOS	J_CMOS1	3-pin header

Table 5-1: Jumpers

5.4.1 Clear CMOS Jumper

Jumper Label:	J_CMOS1
Jumper Type:	3-pin header
Jumper Settings:	See Table 5-2
Jumper Location:	See Figure 5-9

If the WSB-9154 fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets the system BIOS information. To do this, use the jumper cap to close pins 2 and 3 for a few seconds then reinstall the jumper clip back to pins 1 and 2.

If the “CMOS Settings Wrong” message is displayed during the boot up process, the fault may be corrected by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults
- Load Failsafe Defaults.

After having done one of the above, save the changes and exit the CMOS Setup menu.

The clear CMOS jumper settings are shown in **Table 5-2**.

AT Power Select	Description	
Short 1 - 2	Keep CMOS Setup	Default
Short 2 - 3	Clear CMOS Setup	

Table 5-2: Clear CMOS Jumper Settings

The location of the clear CMOS jumper is shown in **Figure 5-9** below.

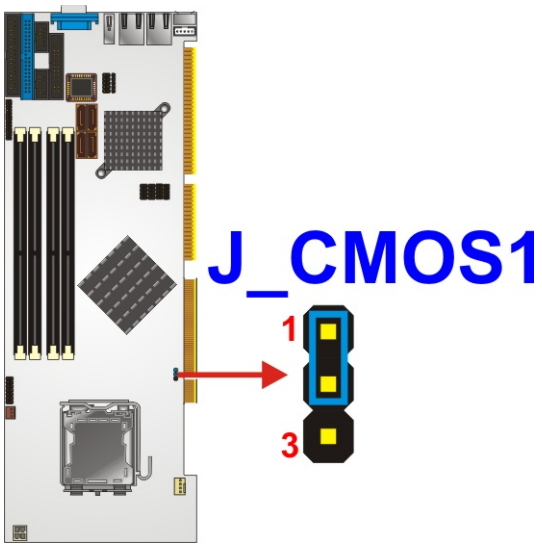

Figure 5-9: Clear CMOS Jumper

5.5 Chassis Installation

5.5.1 Airflow

WARNING!

Airflow is critical to the cooling of the CPU and other on-board components. The chassis in which the WSB-9154 must have air vents to allow cool air to move into the system and hot air to move out.

The WSB-9154 must be installed in a chassis with ventilation holes on the sides allowing airflow to travel through the heat sink surface. In a system with an individual power supply unit, the cooling fan of a power supply can also help generate airflow through the board surface.

NOTE:

IEI has a wide range of backplanes available. Please contact your WSB-9154 vendor, reseller or an IEI sales representative at sales@iei.com.tw or visit the IEI website (http://www.ieiworld.com.tw) to find out more about the available chassis.

5.5.2 Backplane Installation

Before the WSB-9154 can be installed into the chassis, a backplane must first be installed. Please refer to the installation instructions that came with the backplane and the chassis to see how to install the backplane into the chassis.

NOTE:

IEI has a wide range of backplanes available. Please contact your WSB-9154 vendor, reseller or an IEI sales representative at sales@iei.com.tw or visit the IEI website (http://www.ieiworld.com.tw) to find out more about the available chassis.

5.5.3 CPU Card Installation

To install the WSB-9154 CPU card onto a backplane, carefully align the CPU card interface connectors with the corresponding socket on the backplane. To do this, please refer to the reference material that came with the backplane. Next, secure the CPU card to the chassis. To do this, please refer to the reference material that came with the chassis.

5.6 Internal Peripheral Device Connections

5.6.1 Peripheral Device Cables

The cables listed in **Table 5-3** are shipped with the WSB-9154.

Quantity	Type
1	IDE Cable
1	KB/MS cable
2	SATA drive cables
1	SATA drive power cable
1	Serial port cable
1	USB cable

Table 5-3: IEI Provided Cables

Optional cables are listed below:

- ATX 12V power cable
- LPT cable
- FDD cable
- 7.1 channel audio kit
- 5.1 channel audio kit

The following sections describe the cable connections to the CPU card.

5.6.2 IDE Cable Connection

The IDE flat cable connects to the WSB-9154 to one or two IDE devices. To connect an IDE HDD to the WSB-9154 please follow the instructions below.

Step 1: **Locate the IDE connector**. The location/s of the IDE device connector/s is/are shown in **Chapter 3**.

Step 2: **Insert the connector**. Connect the IDE cable connector to the on-board connector. See **Figure 5-10**. A key on the front of the cable connector ensures it can only be inserted in one direction.

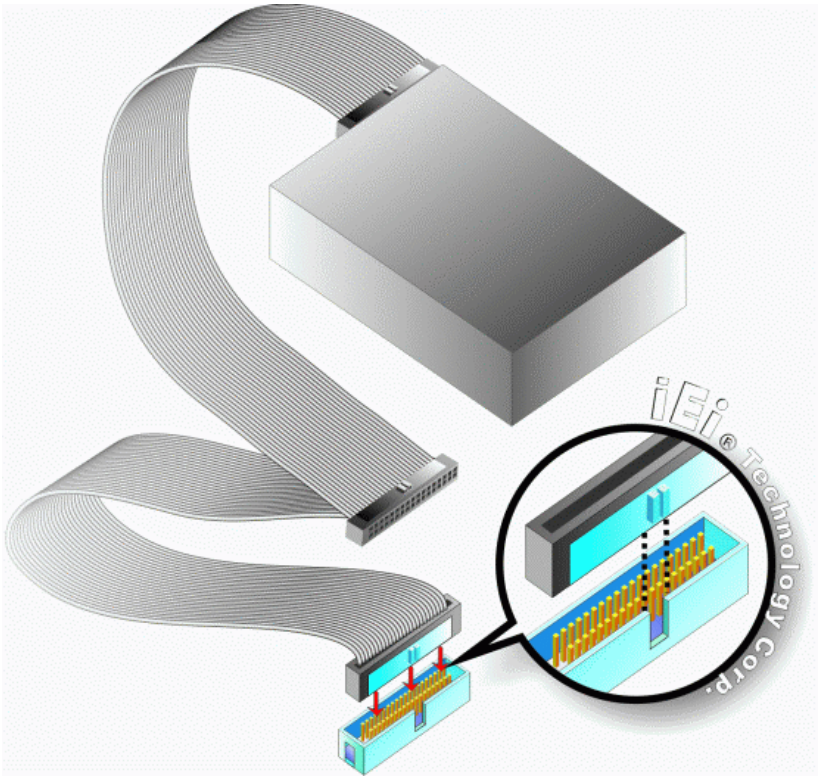

Figure 5-10: IDE Cable Connection

Step 3: **Connect the cable to an IDE device**. Connect the two connectors on the other side of the cable to one or two IDE devices. Make sure that pin 1 on the cable corresponds to pin 1 on the connector.

5.6.3 FDD Cable Connection

NOTE:

This is an optional item that must be ordered separately. For further information please contact the nearest WSB-9154 distributor, reseller or vendor or contact an iEi sales representative directly. Send any queries to sales@iei.com.tw.

The FDD flat cable connects to the WSB-9154 to one FDD device. To connect an FDD to the WSB-9154 please follow the instructions below.

Step 1: **Locate the FDD connector**. The location of the FDD device connector is shown in **Chapter 3**.

Step 2: **Insert the connector**. Connect the FDD cable connector to the on-board connector. See **Figure 5-10**. A key on the front of the cable connector ensures it can only be inserted in one direction.

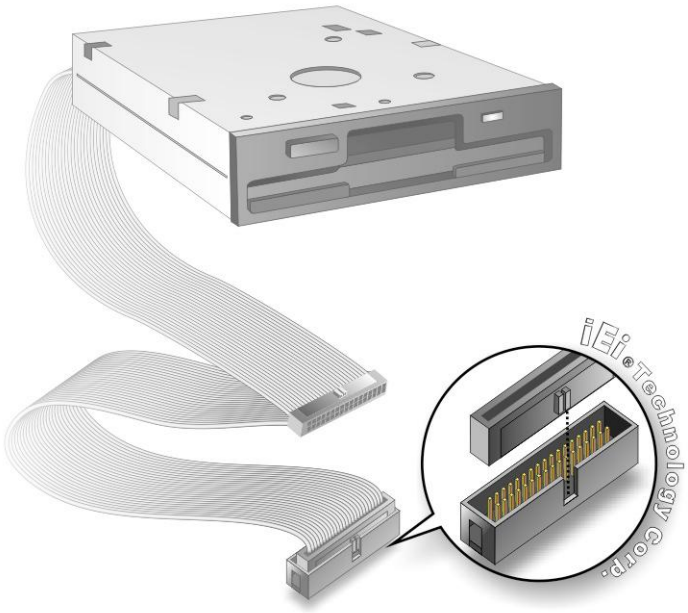

Figure 5-11: FDD Cable Connection

Step 3: **Connect the cable to an FDD device**. Connect the connector at the other end of the cable to an FDD device. Make sure that pin 1 on the cable corresponds to pin 1 on the connector.

5.6.4 5.1 Channel Audio Kit Installation

NOTE:

This is an optional item that must be ordered separately. For further information please contact the nearest WSB-9154 distributor, reseller or vendor or contact an iEi sales representative directly. Send any queries to sales@iei.com.tw.

The optional 5.1 channel audio kit connects to the 10-pin audio connector on the WSB-9154. The audio kit consists of three audio jacks. One audio jack, Mic In, connects to a microphone. The remaining two audio jacks, Line-In and Line-Out, connect to two speakers. To install the audio kit, please refer to the steps below:

Step 1: **Connect the audio kit cable.** The audio kit is shipped with a cable that connects the audio kit to the WSB-9154. Connect the cable to the connector on the back of the audio kit. Make sure the pins are properly aligned (i.e. pin 1 connects to pin 1).

Step 2: **Locate the audio connector**. The location of the 10-pin audio connector is shown in **Chapter 3**.

Step 3: **Align pin 1**. Align pin 1 on the on-board connector with pin 1 on the audio kit cable connector. Pin 1 on the audio kit cable connector is indicated with a white dot. See **Figure 5-12**.

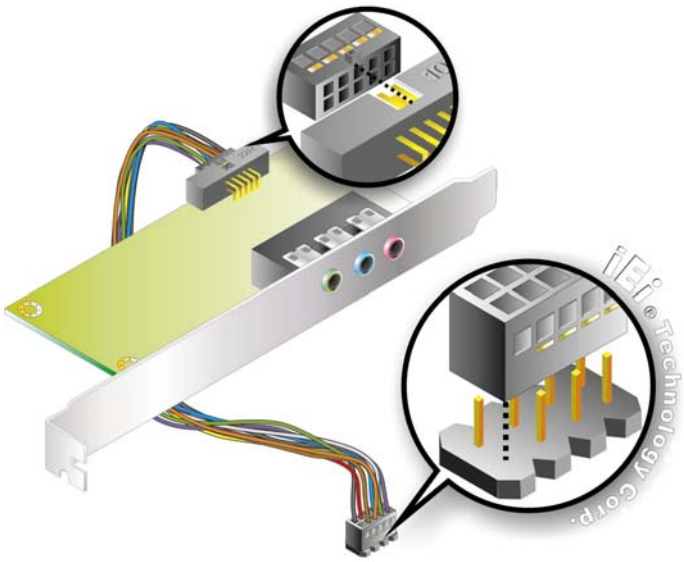

Figure 5-12: 5.1 Channel Audio Kit

Step 4: **Mount the audio kit onto the chassis**. Once the audio kit is connected to the WSB-9154, secure the audio kit bracket to the system chassis.

Step 5: **Connect the audio devices**. Connect one speaker to the line-in audio jack, one speaker to the line-out audio jack and a microphone to the mic-in audio jack.

Step 6: **Install the driver**. If the 5.1 channel audio kit is used, the ALC655 Realtek codec driver must be installed. Refer to **Chapter 7** for driver installation instructions.

5.6.5 7.1 Channel Audio Kit Installation

NOTE:

This is an optional item that must be ordered separately. For further information please contact the nearest WSB-9154 distributor, reseller or vendor or contact an iEi sales representative directly. Send any queries to sales@iei.com.tw.

The optional 7.1 channel audio kit connects to the 10-pin audio connector on the WSB-9154. The audio kit consists of five audio jacks. One audio jack, Mic In, connects to a microphone. The remaining four audio jacks, Line-In, Front-Out, Rear-Out, and Center Subwoofer, connect to speakers. To install the audio kit, please refer to the steps below:

Step 1: **Connect the audio kit cable.** The audio kit is shipped with a cable that connects the audio kit to the WSB-9154. Connect the cable to the connector on the back of the audio kit. Make sure the pins are properly aligned (i.e. pin 1 connects to pin 1).

Step 2: **Locate the audio connector**. The location of the 10-pin audio connector is shown in **Chapter 3**.

Step 3: **Align pin 1**. Align pin 1 on the on-board connector with pin 1 on the audio kit cable connector. Pin 1 on the audio kit cable connector is indicated with a white dot. See **Figure 5-12**.

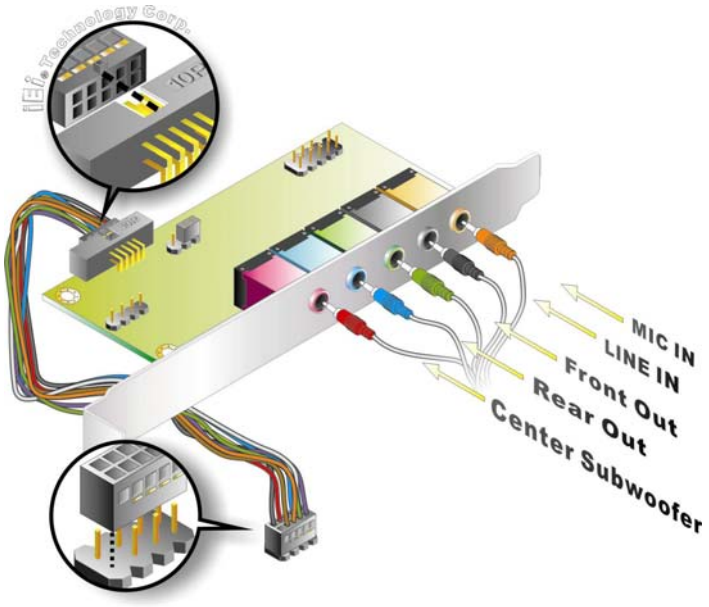

Figure 5-13: 5.1 Channel Audio Kit

Step 4: **Mount the audio kit onto the chassis**. Once the audio kit is connected to the WSB-9154, secure the audio kit bracket to the system chassis.

Step 5: **Connect the audio devices**. Connect one speaker to the line-in audio jack, one speaker to the line-out audio jack and a microphone to the mic-in audio jack.

Step 6: **Install the driver**. If the 7.1 channel audio kit is used, the Realtek HD Audio (ALC883) driver must be installed. Refer to **Chapter 7** for driver installation instructions.

5.6.6 Dual RS-422/485 Cables

The WSB-9154 is shipped with one RS-422/485 dual serial port connector cable. The dual serial port connector cable connects the serial port connectors on the cable to the RS-422/485 serial port connectors on the WSB-9154. Follow the steps below to connect the dual serial port connector cable.

Step 1: **Locate the serial port connector**. The location of the RS-422/485 serial port connector is shown in **Chapter 3**.

Step 2: **Align the connectors**. Correctly align pin 1 on the cable connector with pin 1 on the WSB-9154 serial port connector.

Step 3: **Insert the cable connectors** Once the cable connector is properly aligned with the serial port connector on the WSB-9154, connect the cable connector to the on-board connectors. See Figure 5-14.

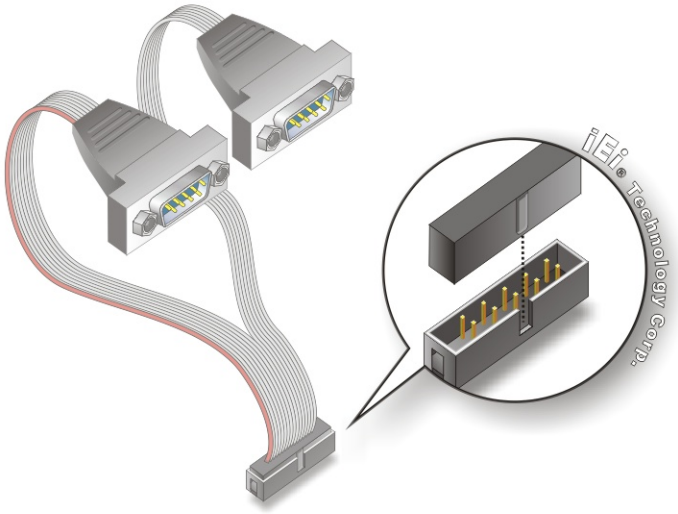

Figure 5-14: Dual Serial Port Connector Cable Connection

Step 4: **Attach DB-9 serial port connectors to the chassis**. The dual DB-9 serial port connectors can be inserted into dual preformed holes in the chassis. Once, inserted the DB-9 connectors should be secured to the chassis with retention screws.

5.6.7 USB Cable (Dual Port)

The WSB-9154 is shipped with a dual port USB 2.0 cable. To connect the USB cable connector, please follow the steps below.

Step 1: **Locate the connectors**. The locations of the USB connectors are shown in **Chapter 3**.

WARNING!

If the USB pins are not properly aligned, the USB device can burn out.

Step 2: **Align the connectors**. The cable has two connectors. Correctly align pin 1on each cable connector with pin 1 on the WSB-9154 USB connector.

Step 3: **Insert the cable connectors** Once the cable connectors are properly aligned with the USB connectors on the WSB-9154, connect the cable connectors to the on-board connectors. See **Figure 5-15**.

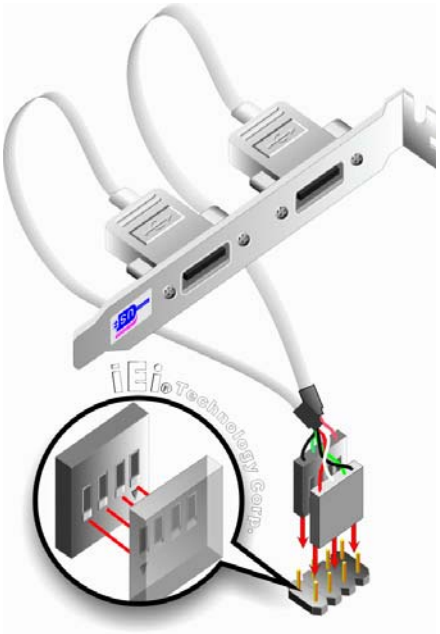

Figure 5-15: Dual USB Cable Connection

Step 4: **Attach the bracket to the chassis**. The USB 2.0 connectors are attached to a bracket. To secure the bracket to the chassis please refer to the installation instructions that came with the chassis.

5.6.8 Parallel Port Cable with Slot Bracket

NOTE:

This is an optional item that must be ordered separately. For further information please contact the nearest WSB-9154 distributor, reseller or vendor or contact an iEi sales representative directly. Send any queries to sales@iei.com.tw.

The optional parallel port (LPT) cable respectively connects the on-board LPT 26-pin box header to an external LPT device (like a printer). The cable comprises a 26-pin female header, to be connected to the on-board LPT box-header, on one side and on the other side a standard external LPT connector. To connect the LPT cable, please follow the steps below.

Step 1: **Locate the connector**. The LPT connector location is shown in **Chapter 4**.

Step 2: **Align the connectors**. Correctly align pin 1 on the cable connector with pin 1 on the WSB-9154 LPT box-header connector. See **Figure 5-16**.

Step 3: **Insert the cable connectors** Once the cable connector is properly aligned with the 26-pin box-header connector on the WSB-9154, connect the cable connector to the on-board connector. See **Figure 5-16.**

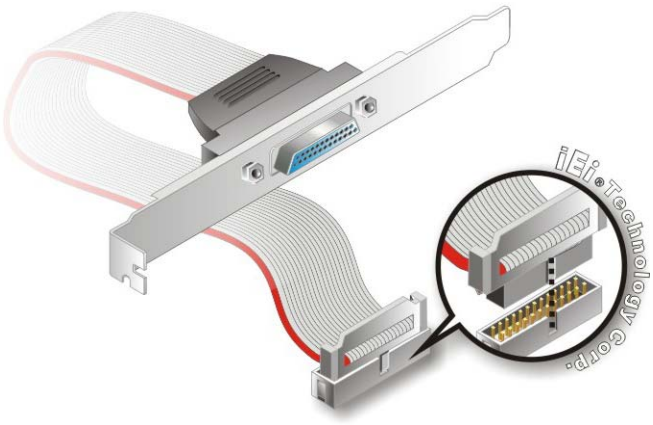

Figure 5-16: LPT Cable Connection

Step 4: **Attach the LPT connector bracket to the chassis**. The LPT cable connector is connected to a standard external LPT interface connector. To secure the LPT interface connector to the chassis please refer to the installation instructions that came with the chassis.

Step 5: **Connect LPT device**. Once the LPT interface connector is connected to the chassis, the LPT device can be connected to the LPT interface connector. See **Figure 5-17**.

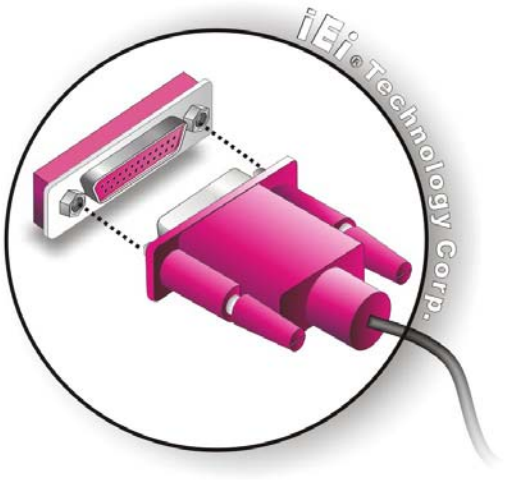

Figure 5-17: Connect the LPT Device

5.6.9 SATA Drive Connection

The WSB-9154 is shipped with two SATA drive cables and one SATA drive power cable. To connect the SATA drives to the connectors, please follow the steps below.

Step 1: **Locate the connectors**. The locations of the SATA drive connectors are shown in **Chapter 3**.

Step 2: **Insert the cable connector**. Press the clip on the connector at the end of the SATA cable and insert the cable connector into the on-board SATA drive connector. See **Figure 5-18**.

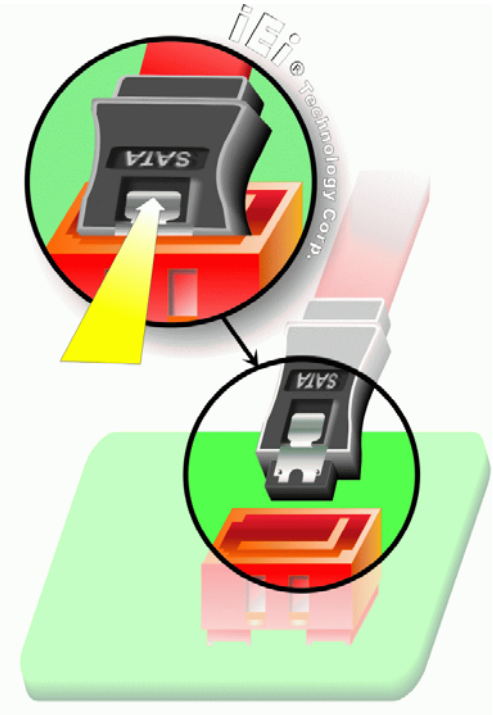

Figure 5-18: SATA Drive Cable Connection

Step 3: **Connect the cable to the SATA disk**. Connect the connector on the other end of the cable to the connector at the back of the SATA drive. See **Figure 5-19**.

Step 4: **Connect the SATA power cable**. Connect the SATA power connector to the back of the SATA drive. See **Figure 5-19**.

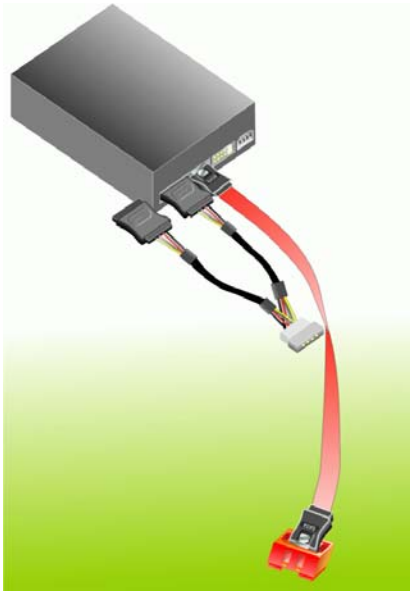

Figure 5-19: SATA Power Drive Connection

5.7 External Peripheral Interface Connection

The following external peripheral devices can be connected to the external peripheral interface connectors.

- PS/2 Keyboard/Mouse
- RJ-45 Ethernet cable connectors
- USB devices
- VGA monitor

To install these devices, connect the corresponding cable connector from the actual device to the corresponding WSB-9154 external peripheral interface connector making sure the pins are properly aligned.

5.7.1 PS/2 Keyboard/Mouse Connection

The WSB-9154 has a single PS/2 connector on the external peripheral interface panel. The PS/2 connector is connected to a keyboard or mouse. Follow the instructions below to connect a keyboard or mouse to the WSB-9154.

Step 1: **Locate the PS/2 connector**. The location of the PS/2 connector is shown in **Chapter 3**.

Step 2: **Align the PS/2 connector**. Align the PS/2 connector on the keyboard cable with the PS/2 connector on the external peripheral interface.

Step 3: **Insert the PS/2 connector** Once the connectors are properly, insert thePS/2 connector from the keyboard into the PS/2 connector on the WSB-9154. See **Figure 5-20.**

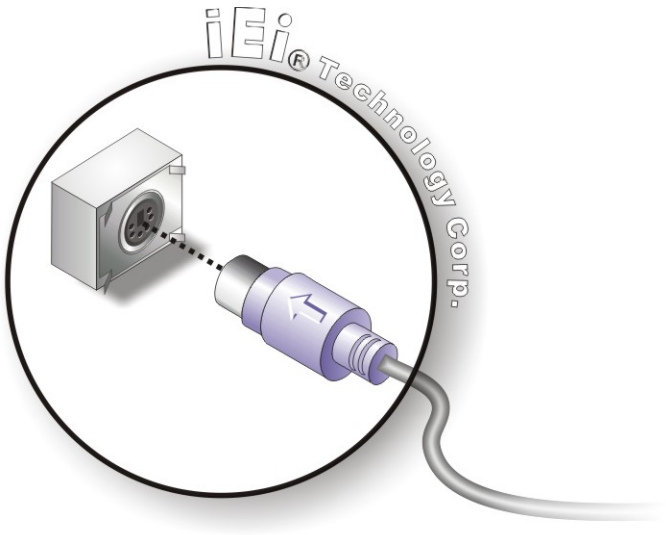

Figure 5-20: PS/2 Connector

5.7.2 LAN Connection

There are two external RJ-45 LAN connectors. The RJ-45 connectors enable connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 1: **Locate the RJ-45 connectors**. The locations of the USB connectors are shown in **Chapter 4**.

Step 2: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the WSB-9154. See **Figure 5-21**.

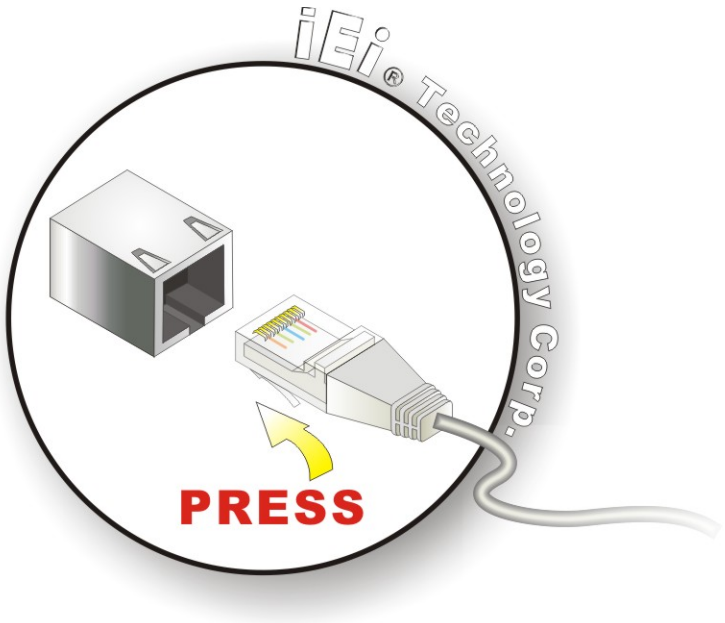

Figure 5-21: LAN Connection

Step 3: **Insert the LAN cable RJ-45 connector.** Once aligned, gently insert the LAN cable RJ-45 connector into the on-board RJ-45 connector.

5.7.3 USB Device Connection (Single Connector)

There are two external USB 2.0 connectors. Both connectors are perpendicular to the WSB-9154. To connect a USB 2.0 or USB 1.1 device, please follow the instructions below.

Step 1: **Located the USB connectors**. The locations of the USB connectors are shown in **Chapter 4**.

Step 2: **Align the connectors.** Align the USB device connector with one of the connectors on the WSB-9154. See **Figure 5-21**.

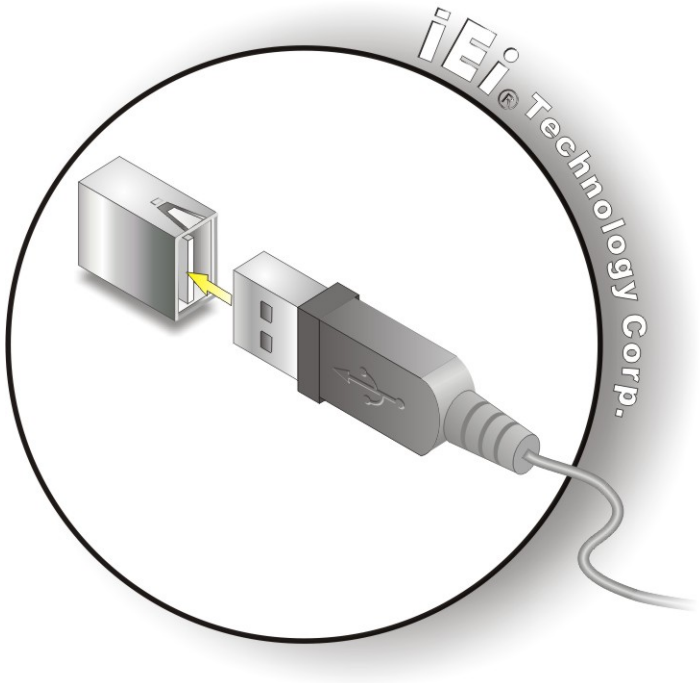

Figure 5-22: USB Device Connection

Step 3: **Insert the device connector.** Once aligned, gently insert the USB device connector into the on-board connector.

5.7.4 VGA Monitor Connection

The WSB-9154 has a single female DB-15 connector on the external peripheral interface panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the WSB-9154, please follow the instructions below.

Step 1: **Locate the female DB-15 connector**. The location of the female DB-15 connector is shown in **Chapter 3**.

Step 2: **Align the VGA connector**. Align the male DB-15 connector on the VGA screen cable with the female DB-15 connector on the external peripheral interface.

Step 3: **Insert the VGA connector** Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the WSB-9154. See **Figure 5-23**.

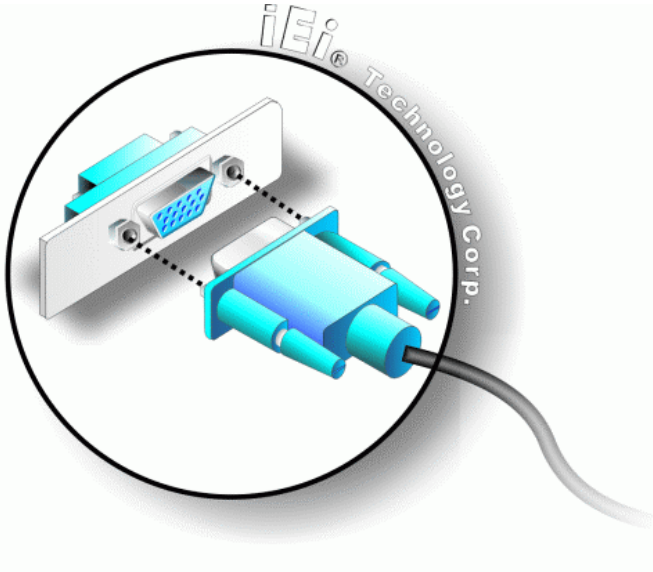

Figure 5-23: VGA Connector

Step 4: **Secure the connector**. Secure the DB-15 VGA connector from the VGA monitor to the external interface by tightening the two retention screws on either side of the connector.

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Chapter

6

AMI BIOS

6.1 Introduction

A licensed copy of AMI BIOS is preprogrammed into the ROM BIOS. The BIOS setup program allows users to modify the basic system configuration. This chapter describes how to access the BIOS setup program and the configuration options that may be changed.

6.1.1 Starting Setup

The AMI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the "**Press Del to enter SETUP**" message appears on the screen.

If the message disappears before the DELETE key is pressed, restart the computer and try again.

6.1.2 Using Setup

Use the arrow keys to highlight items, press ENTER to select, use the PageUp and PageDown keys to change entries, press F1 for help and press ESC to quit. Navigation keys are shown in.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu – Exit current page and return to Main Menu

Key	Function
Page Up key	Increase the numeric value or make changes
Page Dn key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 /F3 key	Change color from total 16 colors. F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

Table 6-1: BIOS Navigation Keys

6.1.3 Getting Help

When F1 is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press ESC or the F1 key again.

6.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in **Section 5.4**.

6.1.5 BIOS Menu Bar

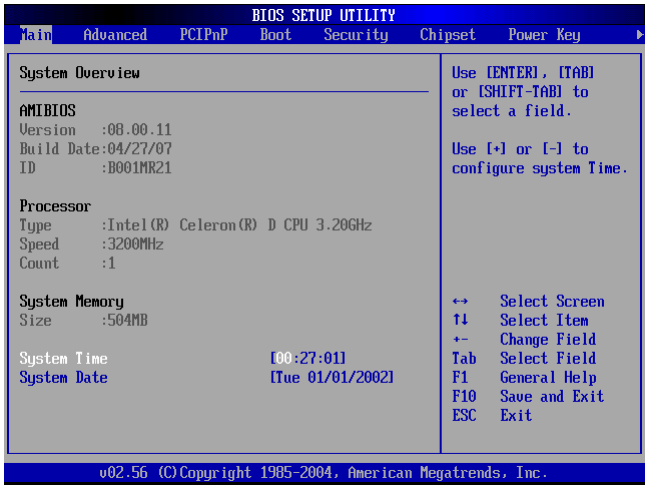
The menu bar on top of the BIOS screen has the following main items:

- **Main** Changes the basic system configuration.
- **Advanced** Changes the advanced system settings.
- **PCIPnP** Changes the advanced PCI/PnP Settings
- **Boot** Changes the system boot configuration.
- **Security** Sets User and Supervisor Passwords.
- **Chipset** Changes the chipset settings.
- **Power Key** Changes power management settings.
- **Exit** Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

6.2 Main

The Main BIOS menu (**BIOS Menu 1**) appears when the BIOS Setup program is entered. The Main menu gives an overview of the basic system information.



BIOS Menu 1: Main

➔ System Overview

The System Overview lists a brief summary of different system components. The fields in System Overview cannot be changed. The items shown in the system overview include:

- **AMI BIOS**: Displays auto-detected BIOS information
  - **Version**: Current BIOS version
  - **Build Date**: Date the current BIOS version was made
  - **ID**: Installed BIOS ID
- **Processor**: Displays auto-detected CPU specifications
  - **Type**: Names the currently installed processor
  - **Speed**: Lists the processor speed
  - **Count**: The number of CPUs on the motherboard
- **System Memory**: Displays the auto-detected system memory.
  - **Size**: Lists memory size

The System Overview field also has two user configurable fields:

➔ **System Time [xx:xx:xx]**

Use the System Time option to set the system time. Manually enter the hours, minutes and seconds.

➔ **System Date [xx/xx/xx]**

Use the System Date option to set the system date. Manually enter the day, month and year.

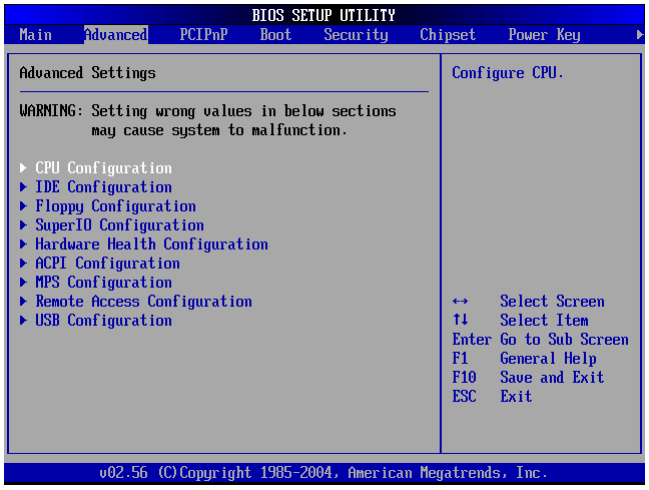
6.3 Advanced

Use the Advanced menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

WARNING!

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

- **CPU Configuration** (see **Section 6.3.1**)
- **IDE Configuration** (see **Section 6.3.2**)
- **Floppy Configuration (see Section 6.3.3)**
- **Super IO Configuration** (see **Section 6.3.4**)
- **Hardware Health Configuration** (see **Section 6.3.5**)
- **ACPI Configuration** (see **Section 6.3.6**)
- **MPS Configuration** (see **Section 6.3.7**)
- **Remote Access Configuration** (see **Section 6.3.8**)
- **USB Configuration** (see **Section 6.3.9**)



BIOS Menu 2: Advanced

6.3.1 CPU Configuration

Use the CPU Configuration menu (**BIOS Menu 3**) to view detailed CPU specifications and configure the CPU.

BIOS Menu 3: CPU Configuration

The CPU Configuration menu lists the following CPU details:

- **Module Version**: xx.xx
- **Manufacturer**: Lists the name of the CPU manufacturer
- **Brand String**: Lists the CPU type and processing speed
- **Frequency**: Lists the CPU processing speed

- **FSB Speed**: Lists the FSB speed
- **Cache L1**: Lists the CPU L1 cache size
- **Cache L2**: Lists the CPU L2 cache size

The following **CPU Configuration** menu items can be configured.

- Hyper Threading Function

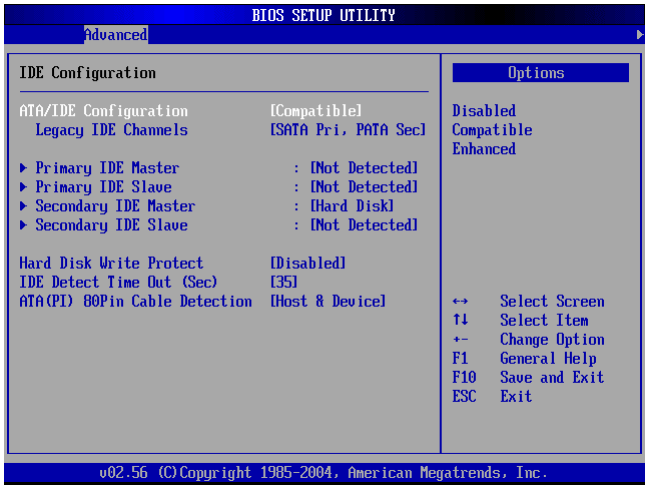
➔ **Hyper Threading Function [Enabled]**

Use the **Hyper Threading Function** to enable or disable the CPU hyper threading function.

➔ **Disabled**		Disables the use of hyper threading technology
➔ **Enabled**	**DEFAULT**	Enables the use of hyper threading technology

6.3.2 IDE Configuration

Use the IDE Configuration menu (BIOS Menu 4) to change and/or set the configuration of the IDE devices installed in the system.



BIOS Menu 4: IDE Configuration

➔ **ATA/IDE Configurations [Compatible]**

Use the **ATA/IDE Configurations** option to configure the ATA/IDE controller.

➔ **Disabled**		Disables the on-board ATA/IDE controller.
➔ **Compatible**		Configures the on-board ATA/IDE controller to be in compatible mode. In this mode, a SATA channel will replace one of the IDE channels. This mode supports up to 4 storage devices.
➔ **Enhanced**	**DEFAULT**	Configures the on-board ATA/IDE controller to be in Enhanced mode. In this mode, IDE channels and SATA channels are separated. This mode supports up to 6 storage devices. Some legacy OS do not support this mode.

➔ **Legacy IDE Channels [PATA Pri, SATA Sec]**

Use the **Legacy IDE Channels** option to determine how SATA channels and PATA channels are ordered.

➔ **SATA Only**		Enables SATA channels only.
➔ **PATA Pri, SATA Sec**		Puts SATA channels behind PATA channels.
➔ **SATA Pri, PATA sec**	**DEFAULT**	Puts SATA channels before PATA channels.
➔ **PATA Only**		Enables PATA channels only.

➔ **IDE (Master) and IDE (Slave)**

When entering setup, BIOS auto detects the presence of IDE devices. BIOS displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the IDE Configuration menu:

- Primary IDE (Master)
- Primary IDE (Slave)
- Secindary IDE (Master)
- Secondary IDE (Slave)

The IDE Configuration menu (BIOS Menu 4) allows changes to the configurations for the IDE devices installed in the system. If an IDE device is detected, and one of the above listed four BIOS configuration options are selected, the IDE configuration options shown in **Section 6.3.2** appear.

➔ **Hard Disk Write Protect [Disabled]**

The **Hard Disk Write Protect** BIOS option protects the hard disks from being overwritten. This menu item is only effective if the device is accessed through the BIOS.

➔	**Disabled**	**DEFAULT**	Allows hard disks to be overwritten
➔	**Enabled**		Prevents hard disks from being overwritten

➔ **IDE Detect Time Out (Sec) [35]**

The **IDE Detect Time Out (Sec)** BIOS option specifies the maximum time (in seconds) the AMI BIOS will search for IDE devices. This allows fine-tunes the settings to allow for faster boot times. The following configuration options are available.

- 0 seconds
- 5 seconds
- 10 seconds
- 15 seconds
- 20 seconds
- 25 seconds
- 30 seconds
- 35 seconds **DEFAULT**

The best setting to use if the onboard IDE controllers are set to a specific IDE disk drive in the AMIBIOS is “0 seconds” and a large majority of ultra ATA hard disk drives can be detected well within “5 seconds” (the default setting).

➔ **ATA (PI) 80Pin Cable Detection [Host & Device]**

When an Ultra ATA/66, an Ultra ATA/100 or an Ultra ATA/133 IDE hard disk drive is used, an 80-conductor ATA cable must be used. The 80-conductor ATA cable is plug compatible with the standard 40-conductor ATA cable. The system must detect the presence of correct cable so that the AMIBIOS can instruct the drive to run at the correct speed for the cable type detected.

The **ATA (PI) 80Pin Cable Detection** BIOS option determines how the IDE cable will be detected.

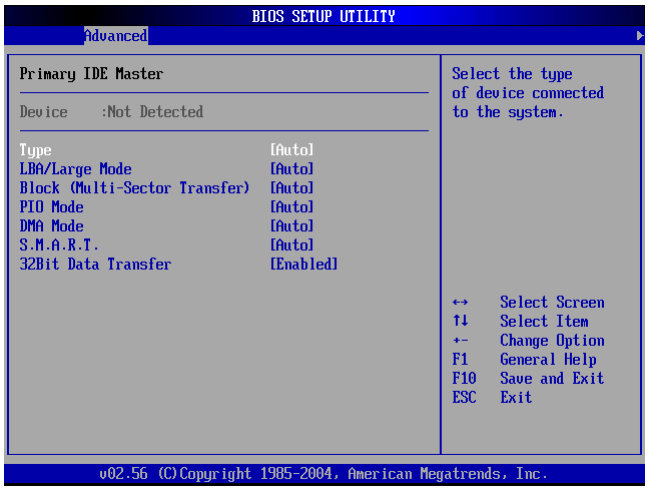
➔ **Host & Device** **DEFAULT** Both the motherboard onboard IDE controller and IDE disk drive are used to detect the type of IDE cable used.

➔ **Host** The motherboard onboard IDE controller detects the type of IDE cable used.

➔ **Device** The IDE disk drive detects the type of IDE cable used.

6.3.2.1 IDE Master, IDE Slave

Use the IDE Master and IDE Slave configuration menu (**BIOS Menu 5**) to view both primary and secondary IDE device details and configure the IDE devices connected to the system.



BIOS Menu 5: IDE Master and IDE Slave Configuration

➔ **Auto-Detected Drive Parameters**

The “grayed-out” items in the left frame are IDE disk drive parameters automatically detected from the firmware of the selected IDE disk drive. The drive parameters are listed as follows:

- **Device**: Lists the device type (e.g. hard disk, CD-ROM etc.)
- **Type**: Indicates the type of devices a user can manually select
- **LBA/Large Mode**: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.
- **Block (Multi-Sector Transfer)**: Block mode boosts IDE drive performance by

increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.

- **PIO Mode**: Indicates the PIO mode of the installed device.
- **DMA Mode**: Adjust the DMA mode options.
- **S.M.A.R.T.**: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.
- **32Bit Data Transfer**: Enables 32-bit data transfer.

➔ **Type [Auto]**

Use the **Type** BIOS option to select the type of device the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) is complete.

➔ **Not Installed**		BIOS is prevented from searching for an IDE disk drive on the specified channel.
➔ **Auto**	**DEFAULT**	The BIOS auto detects the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel.
➔ **CD/DVD**		The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS does not attempt to search for other types of IDE disk drives on the specified channel.
➔ **ARMD**		This option specifies an ATAPI Removable Media Device. These include, but are not limited to: ➔ **ZIP** ➔ **LS-120**

➔ **LBA/Large Mode [Auto]**

Use the **LBA/Large Mode** option to disable or enable BIOS to auto detects LBA (Logical Block Addressing). LBA is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB.

➔ **Disabled** BIOS is prevented from using the LBA mode control on the specified channel.

➔ **Auto** **DEFAULT** BIOS auto detects the LBA mode control on the specified channel.

➔ **Block (Multi Sector Transfer) [Auto]**

Use the **Block (Multi Sector Transfer)** to disable or enable BIOS to auto detect if the device supports multi-sector transfers.

➔ **Disabled** BIOS is prevented from using Multi-Sector Transfer on the specified channel. The data to and from the device occurs one sector at a time.

➔ **Auto** **DEFAULT** BIOS auto detects Multi-Sector Transfer support on the drive on the specified channel. If supported the data transfer to and from the device occurs multiple sectors at a time.

➔ **PIO Mode [Auto]**

Use the **PIO Mode** option to select the IDE PIO (Programmable I/O) mode program timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

➔ **Auto** **DEFAULT** BIOS auto detects the PIO mode. Use this value if the IDE disk drive support cannot be determined.

- ➔ **0** PIO mode 0 selected with a maximum transfer rate of 3.3MBps
- ➔ **1** PIO mode 1 selected with a maximum transfer rate of 5.2MBps
- ➔ **2** PIO mode 2 selected with a maximum transfer rate of 8.3MBps
- ➔ **3** PIO mode 3 selected with a maximum transfer rate of 11.1MBps
- ➔ **4** PIO mode 4 selected with a maximum transfer rate of 16.6MBps

  (This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.)

➔ **DMA Mode [Auto]**

Use the **DMA Mode** BIOS selection to adjust the DMA mode options.

- ➔ **Auto** **DEFAULT** BIOS auto detects the DMA mode. Use this value if the IDE disk drive support cannot be determined.
- ➔ **SWDMA0** Single Word DMA mode 0 selected with a maximum data transfer rate of 2.1MBps
- ➔ **SWDMA1** Single Word DMA mode 1 selected with a maximum data transfer rate of 4.2MBps
- ➔ **SWDMA2** Single Word DMA mode 2 selected with a maximum data transfer rate of 8.3MBps
- ➔ **MWDMA0** Multi Word DMA mode 0 selected with a maximum data transfer rate of 4.2MBps
- ➔ **MWDMA1** Multi Word DMA mode 1 selected with a maximum data transfer rate of 13.3MBps
- ➔ **MWDMA2** Multi Word DMA mode 2 selected with a maximum data transfer rate of 16.6MBps

- **UDMA1** Ultra DMA mode 0 selected with a maximum data transfer rate of 16.6MBps
- **UDMA1** Ultra DMA mode 1 selected with a maximum data transfer rate of 25MBps
- **UDMA2** Ultra DMA mode 2 selected with a maximum data transfer rate of 33.3MBps
- **UDMA3** Ultra DMA mode 3 selected with a maximum data transfer rate of 44MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)
- **UDMA4** Ultra DMA mode 4 selected with a maximum data transfer rate of 66.6MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)
- **UDMA5** Ultra DMA mode 5 selected with a maximum data transfer rate of 99.9MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)

➔ **S.M.A.R.T [Auto]**

Use the S.M.A.R.T option to auto-detect, disable or enable Self-Monitoring Analysis and Reporting Technology (SMART) on the drive on the specified channel. S.M.A.R.T predicts impending drive failures. The S.M.A.R.T BIOS option enables or disables this function.

- **Auto** **DEFAULT** BIOS auto detects HDD SMART support.
- **Disabled** Prevents BIOS from using the HDD SMART feature.
- **Enabled** Allows BIOS to use the HDD SMART feature

➔ **32Bit Data Transfer [Enabled]**

Use the 32Bit Data Transfer BIOS option to enables or disable 32-bit data transfers.

➔ **Disabled** Prevents the BIOS from using 32-bit data transfers.

➔ **Enabled** **DEFAULT** Allows BIOS to use 32-bit data transfers on supported hard disk drives.

6.3.3 Floppy Configuration

Use the **Floppy Configuration menu** (BIOS Menu 6) to configure the floppy disk drive connected to the system.

BIOS Menu 6: Floppy Configuration

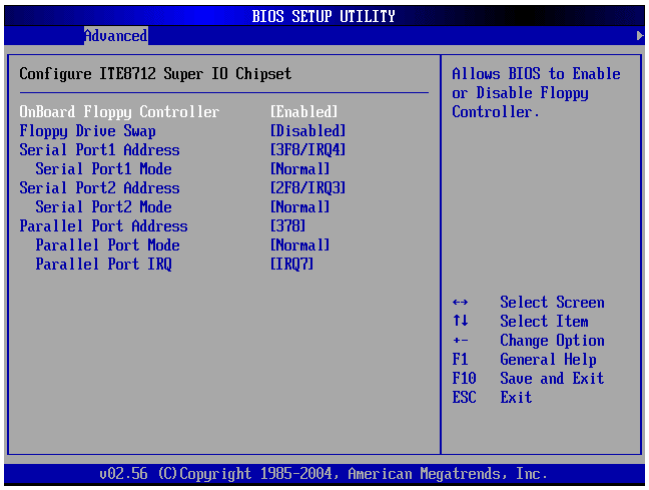
➔ **Floppy A**

Use the **Floppy A** option to configure the floppy disk drive. Options are:

- Disabled
- 360 KB 51/4”
- 1.2 MB 51/4”
- 720 KB 31/2”
- 1.44 MB 31/2” **DEFAULT**
- 2.88 MB 31/2”

6.3.4 Super IO Configuration

Use the IO Configuration menu (**BIOS Menu 7**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.



BIOS Menu 7: Super IO Configuration

➔ **On-board Floppy Controller [Enabled]**

Use the **On-board Floppy Controller** to enable or disable the floppy controller. If a floppy disk is not being used in the system, disabling this option frees up system resources that can be redirected elsewhere in the system.

➔ **Disabled**		Allows BIOS to disable the floppy controller
➔ **Enabled**	**DEFAULT**	Allows BIOS to enable the floppy controller

➔ **Floppy Drive Swap [Disabled]**

The **Floppy Drive Swap** option allows drive A to be designated as drive B and drive be to be designated as drive A.

➔ **Disabled**	**DEFAULT**	Cannot designate A or B to a floppy drive without changing the physical connection

- **Enabled** — Can designate A or B to a floppy drive without changing the physical connection

➔ **Serial Port1 Address [3F8/IRQ4]**

Use the **Serial Port1 Address** option to select the Serial Port 1 base address.

- **Disabled** — No base address is assigned to Serial Port 1
- **3F8/IRQ4** **DEFAULT** — Serial Port 1 I/O port address is 3F8 and the interrupt address is IRQ4
- **3E8/IRQ4** — Serial Port 1 I/O port address is 3E8 and the interrupt address is IRQ4
- **2E8/IRQ3** — Serial Port 1 I/O port address is 2E8 and the interrupt address is IRQ3

➔ **Serial Port1 Mode [Normal]**

Use the **Serial Port1 Mode** option to select the transmitting and receiving mode for the first serial port.

- **Normal** **DEFAULT** — Serial Port 1 mode is normal
- **IrDA** — Serial Port 1 mode is IrDA
- **ASK IR** — Serial Port 1 mode is ASK IR

➔ **Serial Port2 Address [2F8/IRQ3]**

Use the **Serial Port2 Address** option to select the Serial Port 2 base address.

- **Disabled** — No base address is assigned to Serial Port 2
- **2F8/IRQ3** **DEFAULT** — Serial Port 2 I/O port address is 3F8 and the interrupt address is IRQ3

- **3E8/IRQ4** Serial Port 2 I/O port address is 3E8 and the interrupt address is IRQ4
- **2E8/IRQ3** Serial Port 2 I/O port address is 2E8 and the interrupt address is IRQ3

➔ **Serial Port2 Mode [Normal]**

Use the **Serial Port2 Mode** option to select the Serial Port2 operational mode.

- **Normal** **DEFAULT** Serial Port 2 mode is normal
- **IrDA** Serial Port 2 mode is IrDA
- **ASK IR** Serial Port 2 mode is ASK IR

➔ **Parallel Port Address [378]**

Use the **Parallel Port Address** option to select the parallel port base address.

- **Disabled** No base address is assigned to the Parallel Port
- **378** **DEFAULT** Parallel Port I/O port address is 378
- **278** Parallel Port I/O port address is 278
- **3BC** Parallel Port I/O port address is 3BC

➔ **Parallel Port Mode [Normal]**

Use the **Parallel Port Mode** option to select the mode the parallel port operates in.

➔ **Normal**	**DEFAULT**	The normal parallel port mode is the standard mode for parallel port operation.
➔ **Bi-directional**		Parallel port outputs are 8-bits long. Inputs are accomplished by reading 4 of the 8 bits on the status register.
➔ **EPP**		The parallel port operates in the enhanced parallel port mode (EPP). The EPP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode.
➔ **ECP+EPP**		The parallel port operates in the extended capabilities port (ECP) mode. The ECP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode The parallel port is also be compatible with EPP devices described above

➔ **Parallel Port IRQ [IRQ7]**

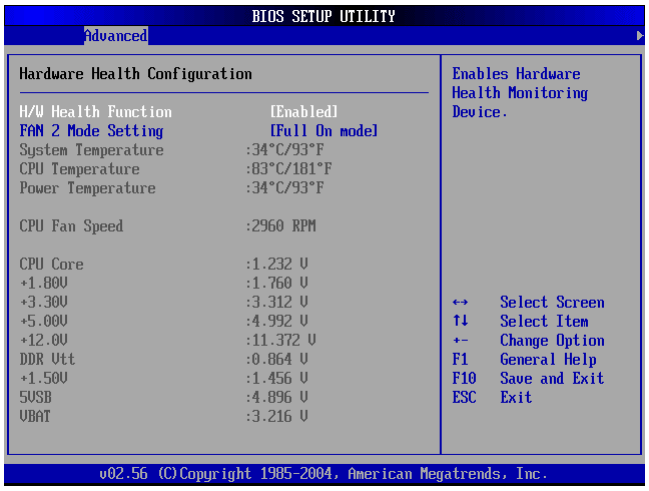
Use the **Parallel Port IRQ** selection to set the parallel port interrupt address.

➔ **IRQ5** IRQ5 is assigned as the parallel port interrupt address

➔ **IRQ7** **DEFAULT** IRQ7 is assigned as the parallel port interrupt address

6.3.5 Hardware Health Configuration

The Hardware Health Configuration menu (**BIOS Menu 8**) shows the operating temperature, fan speeds and system voltages.



BIOS Menu 8: Hardware Health Configuration

➔ **H/W Health Function [Enabled]**

Use the **H/W Health Function** to enable the monitoring of the system environmental parameters.

➔ **Disabled** Disables the health monitoring function

➔ **Enabled** **DEFAULT** Enables the health monitoring function

➔ **FAN 2 Mode Setting [Full On Mode]**

Use the **FAN 2 Mode Setting** option to configure the second fan.

➔ **Full On Mode**	**DEFAULT**	Fan is on all the time
➔ **Automatic mode**		Fan is off when the temperature is low enough. Parameters must be set by the user.
➔ **PWM Manual mode**		Pulse width modulation set manually

The following system parameters and values are shown. The system parameters that are monitored are:

- **System Temperatures**: The following system temperatures are monitored
  - System Temperature #1
  - CPU Temperature
  - Power Temperature

- **Fan Speeds**: The following cooling fan speeds are monitored
  - CPU Fan

- **Voltages**: The following system voltages are monitored
  - CPU Core
  - +1.80V
  - +3.30V
  - +5.00V
  - +12.0V
  - DDR Vtt
  - +1.50V
  - 5VSB
  - VBAT

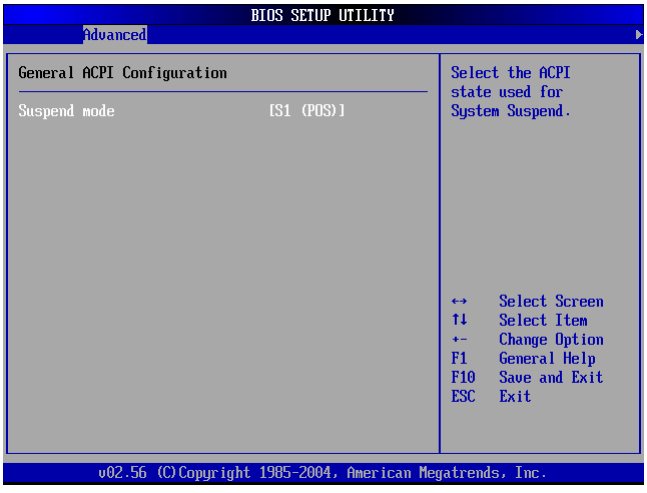
6.3.6 ACPI Configuration

The **ACPI Configuration** menu (**BIOS Menu 9**) configures the General Configuration and Power Interface (ACPI) option.

BIOS Menu 9: ACPI Configuration

6.3.6.1 General ACPI Configuration

Use the **General ACPI Configuration** menu (**BIOS Menu 10**) to select the ACPI state when the system is suspended.



BIOS Menu 10: General ACPI Configuration

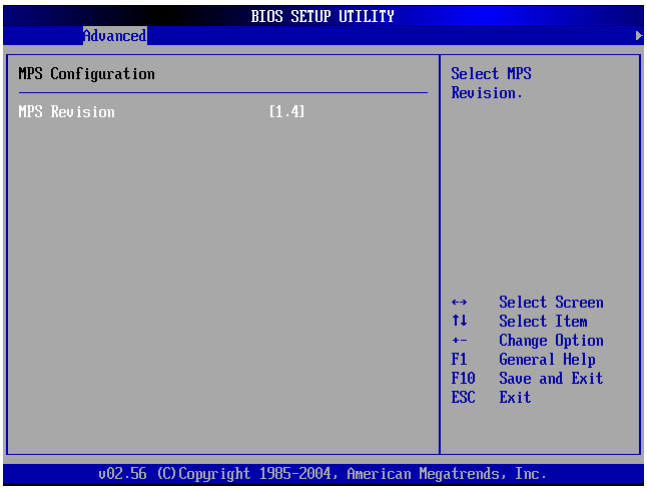
➔ **Suspend Mode [S1 (POS)]**

Use the **Suspend Mode** option to specify the sleep state the system enters when it is not being used.

➔ **S1 (POS)** **DEFAULT** The system enters S1 (POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.

6.3.7 MPS Configuration

Use the **MPS Configuration** menu (**BIOS Menu 11**) to select the multi-processor table.



BIOS Menu 11: MPS Configuration

➔ **MPS Revision [1.4]**

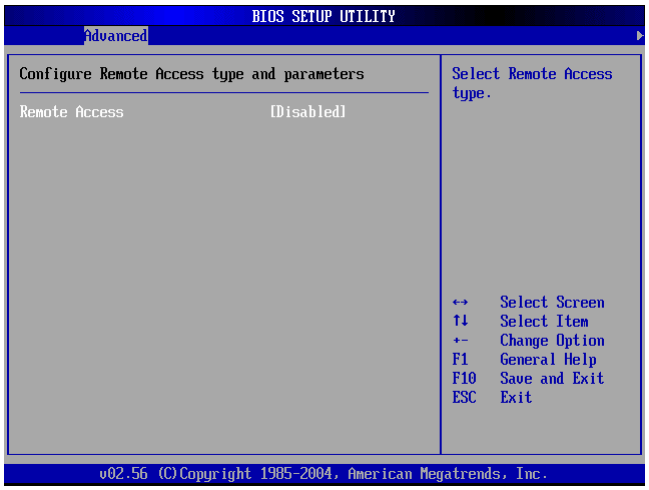
Use the **Multiprocessor Specification (MPS) for OS** option to specify the MPS version to be used.

➔ **1.1** MPS version 1.1 is used

➔ **1.4** **DEFAULT** MPS version 1.4 is used

6.3.8 Remote Access Configuration

Use the **Remote Access Configuration** menu (**BIOS Menu 12**) to configure remote access parameters. The **Remote Access Configuration** is an AMIBIOS feature and allows a remote host running a terminal program to display and configure the BIOS settings.



BIOS Menu 12: Remote Access Configuration

➔ **Remote Access [Disabled]**

Use the **Remote Access** option to enable or disable access to the remote functionalities of the system.

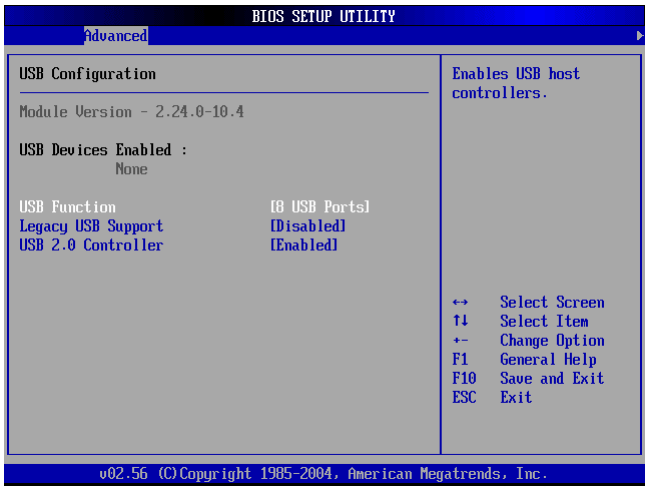
➔ **Disabled**	**DEFAULT**	Remote access is disabled.
➔ **Enabled**		Remote access configuration options shown below appear:

- ➔ **Serial Port Number**
- ➔ **Serial Port Mode**
- ➔ **Flow Control**
- ➔ **Redirection after BIOS POST**
- ➔ **Terminal Type**
- ➔ **VT-UTF8 Combo Key Support**
- ➔ **Sredir Memory Display Delay**

These configuration options are discussed below.

6.3.9 USB Configuration

Use the USB Configuration menu (**BIOS Menu 13**) to read USB configuration information and configure the USB settings.



BIOS Menu 13: USB Configuration

➔ **USB Configuration**

The USB Configuration field shows the system USB configuration. The items listed are:

- Module Version: x.xx.x-xx.x

➔ **USB Devices Enabled**

The **USB Devices Enabled** field lists the USB devices that are enabled on the system.

➔ **USB Function [8 USB Ports]**

Use the USB Function BIOS option to enable or disable a specified number of USB ports. If only two USB ports are being used, disabling the remaining six USB frees up system resources that can be redirected elsewhere.

➔	**Disabled**	USB function support disabled
➔	**2 USB Ports**	Two USB ports are enabled

➔	**4 USB Ports**		Four USB ports are enabled
➔	**6 USB Ports**		Six USB ports are enabled
➔	**8 USB Ports**	**DEFAULT**	Eight USB ports are enabled

➔ **Legacy USB Support [Disabled]**

Use the Legacy USB Support BIOS option to enable USB mouse and USB keyboard support.

Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

➔	**Disabled**	**DEFAULT**	Legacy USB support disabled
➔	**Enabled**		Legacy USB support enabled
➔	**Auto**		Legacy USB support disabled if no USB devices are connected

➔ **USB 2.0 Controller [Enabled]**

Use the USB 2.0 Controller BIOS option to enable or disable the USB 2.0 controller

➔	**Disabled**		USB 2.0 controller disabled
➔	**Enabled**	**DEFAULT**	USB 2.0 controller enabled

6.4 PCI/PnP

Use the **PCI/PnP** menu (**BIOS Menu 14**) to configure advanced PCI and PnP settings.

WARNING!

Setting wrong values for the BIOS selections in the PCI/PnP BIOS menu may cause the system to malfunction.

BIOS Menu 14: PCI/PnP Configuration

➔ Clear NVRAM [No]

Use the **Clear NVRAM** option to specify if the NVRAM (Non-Volatile RAM) is cleared when the power is turned off.

➔	**No**	**DEFAULT**	System does not clear NVRAM during system boot
➔	**Yes**		System clears NVRAM during system boot

➔ **Plug & Play O/S [No]**

Use the **Plug & Play O/S** BIOS option to specify whether system plug and play devices are configured by the operating system or the BIOS.

➔ **No** **DEFAULT** If the operating system does not meet the Plug and Play specifications, this option allows the BIOS to configure all the devices in the system.

➔ **Yes** This setting allows the operating system to change the interrupt, I/O, and DMA settings. Set this option if the system is running Plug and Play aware operating systems.

➔ **PCI Latency Timer [64]**

Use the **PCI Latency Timer** option to specify the PCI latency time. The latency time is measured in units of PCI clock cycles for the PCI device latency timer register. Configuration options are:

- 32
- 64 **DEFAULT**
- 96
- 128
- 160
- 192
- 224
- 248

➔ **Allocate IRQ to PCI VGA [Yes]**

Use the **Allocate IRQ to PCI VGA** option to restrict the system from giving the VGA adapter card an interrupt address.

➔ **Yes**	**DEFAULT**	Assigns an IRQ to a PCI VGA card if card requests IRQ
➔ **No**		Does not assign IRQ to a PCI VGA card even if the card requests an IRQ

➔ **IRQ# [Available]**

Use the **IRQ#** address to specify what IRQs can be assigned to a particular peripheral device.

➔ **Available**	**DEFAULT**	The specified IRQ is available to be used by PCI/PnP devices
➔ **Reserved**		The specified IRQ is reserved for use by Legacy ISA devices

Available IRQ addresses are:

- IRQ3
- IRQ4
- IRQ5
- IRQ7
- IRQ9
- IRQ10
- IRQ 11
- IRQ 14
- IRQ 15

➔ **DMA Channel# [Available]**

Use the **DMA Channel#** option to assign a specific DMA channel to a particular PCI/PnP device.

➔ **Available**	**DEFAULT**	The specified DMA is available to be used by PCI/PnP devices
➔ **Reserved**		The specified DMA is reserved for use by Legacy ISA devices

Available DMA Channels are:

- DM Channel 0
- DM Channel 1
- DM Channel 3
- DM Channel 5
- DM Channel 6
- DM Channel 7

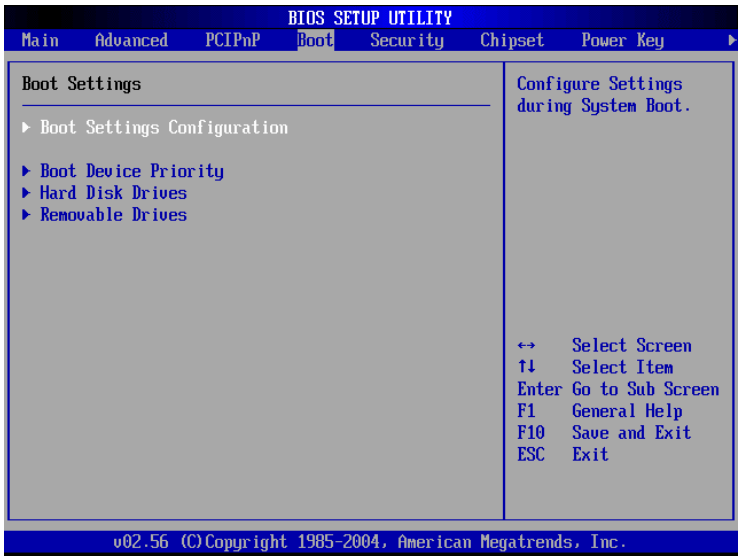
➔ **Reserved Memory Size [Disabled]**

Use the **Reserved Memory Size** BIOS option to specify the amount of memory that should be reserved for legacy ISA devices.

➔ **Disabled**	**DEFAULT**	No memory block reserved for legacy ISA devices
➔ **16K**		16KB reserved for legacy ISA devices
➔ **32K**		32KB reserved for legacy ISA devices
➔ **64K**		54KB reserved for legacy ISA devices

6.5 Boot

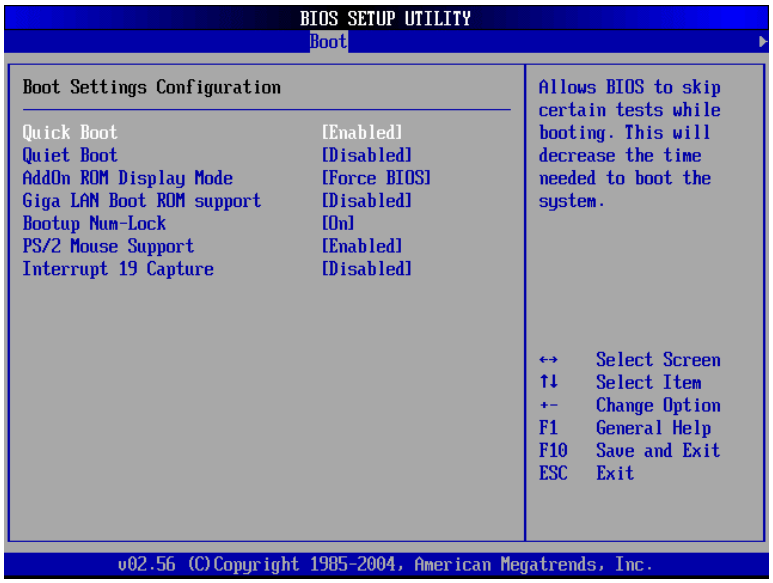
Use the **Boot** menu (**BIOS Menu 15**) to configure system boot options.



BIOS Menu 15: Boot

6.5.1 Boot Settings Configuration

Use the **Boot Settings Configuration** menu (**BIOS Menu 16**) to configure advanced system boot options.


BIOS SETUP UTILITY
Boot
Boot Settings Configuration
Quick Boot [Enabled]
Quiet Boot [Disabled]
AddOn ROM Display Mode [Force BIOS]
Giga LAN Boot ROM support [Disabled]
Bootup Num-Lock [On]
PS/2 Mouse Support [Enabled]
Interrupt 19 Capture [Disabled]
Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
↔ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
v02.56 (C)Copyright 1985-2004, American Megatrends, Inc.

BIOS Menu 16: Boot Settings Configuration

➔ **Quick Boot [Enabled]**

Use the **Quick Boot** BIOS option to make the computer speed up the boot process.

➔ **Disabled**		No POST procedures are skipped
➔ **Enabled**	**DEFAULT**	Some POST procedures are skipped to decrease the system boot time

➔ **Quiet Boot [Disabled]**

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

➔ **Disabled**	**DEFAULT**	Normal POST messages displayed
➔ **Enabled**		OEM Logo displayed instead of POST messages

➔ **AddOn ROM Display Mode [Force BIOS]**

Use the **AddOn ROM Display Mode** option to allow add-on ROM (read-only memory) messages to be displayed.

➔ **Force BIOS**	**DEFAULT**	The system forces third party BIOS to display during system boot.
➔ **Keep Current**		The system displays normal information during system boot.

➔ **Giga LAN Boot ROM Support [Disabled]**

Use the **Giga LAN Boot ROM Support** option to enable the system to be booted from a remote system.

➔ **Disabled**	**DEFAULT**	Cannot be booted from a remote system through the LAN
➔ **Enabled**		Can be booted from a remote system through the LAN

➔ **Bootup Num-Lock [On]**

Use the **Bootup Num-Lock** BIOS option to specify if the number lock setting must be modified during boot up.

➔ **Off**	Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

➔ **On** **DEFAULT** Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

➔ **PS/2 Mouse Support [Auto]**

Use the **PS/2 Mouse Support** option adjusts PS/2 mouse support capabilities.

➔ **Disabled** PS/2 mouse support is disabled and prevented from using system resources.

➔ **Enabled** Allows the system to use a PS/2 mouse.

➔ **Auto** **DEFAULT** The system auto-adjusts PS/2 mouse support.

➔ **Interrupt 19 Capture [Disabled]**

Use the **Interrupt 19 Capture** option to allow optional ROMs such as network controllers to trap BIOS interrupt 19.

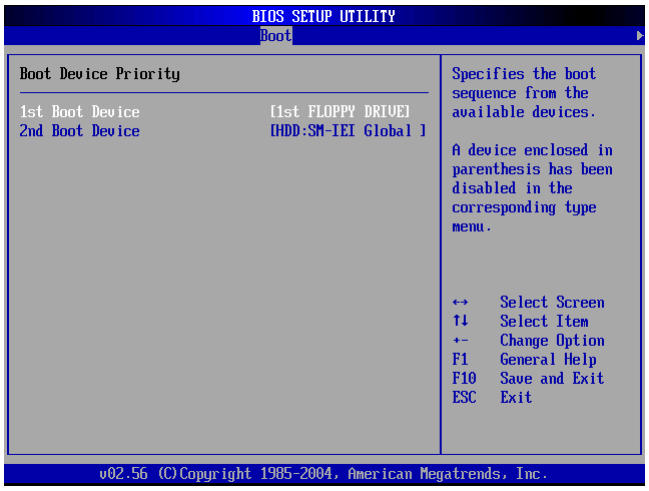
➔ **Disabled** **DEFAULT** Does not allow optional ROM to trap interrupt 19

➔ **Enabled** Allows optional ROM to trap interrupt 19

6.5.2 Boot Device Priority

Use the Boot Device Priority menu (**BIOS Menu 17**) to specify the boot sequence from the available devices. Possible boot devices may include:

- 1st FLOPPY DRIVE
- HDD
- CD/DVD


BIOS SETUP UTILITY
Boot
Boot Device Priority
1st Boot Device [1st FLOPPY DRIVE]
2nd Boot Device [HDD:SM-IEI Global]
Specifies the boot sequence from the available devices.
A device enclosed in parenthesis has been disabled in the corresponding type menu.
↔ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 17: Boot Device Priority Settings

6.5.3 Hard Disk Drives

Use the **Hard Disk Drives** menu (**BIOS Menu** 18) to specify the boot sequence of the available HDDs. When the menu is opened, the HDDs connected to the system are listed as shown below:

- 1st Drive [HDD: PM-(part number)]
- 2nd Drive [HDD: PS-(part number)]
- 3rd Drive [HDD: SM-(part number)]
- 4th Drive [HDD: SM-(part number)]

NOTE:

Only the drives connected to the system are shown. For example, if only two HDDs are connected only "**1st Drive**" and "**2nd Drive**" are listed.

The boot sequence from the available devices is selected. If the "**1st Drive**" option is selected a list of available HDDs is shown. Select the first HDD the system boots from. If the "**1st Drive**" is not used for booting this option may be disabled.

BIOS Menu 18: Hard Disk Drives

6.5.4 Removable Drives

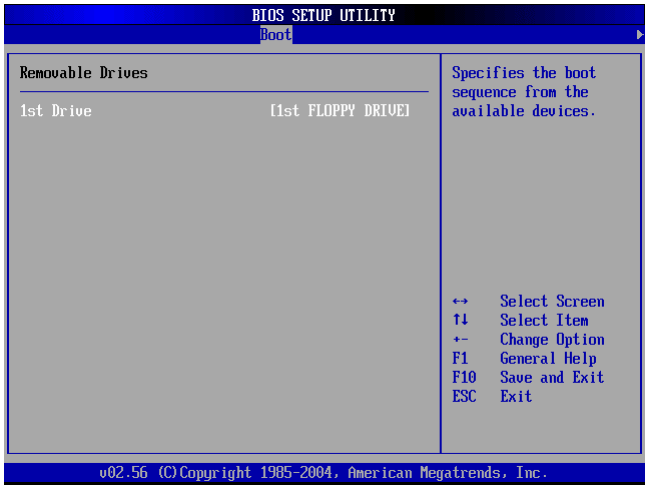
Use the Removable Drives menu (**BIOS Menu 19**) to specify the boot sequence of the available FDDs. When the menu is opened, the FDDs connected to the system are listed as shown below:

- 1st Drive [1st FLOPPY DRIVE]
- 2nd Drive [2nd FLOPPY DRIVE]

NOTE:

Only the drives connected to the system are shown. For example, if only one FDD is connected only "**1st Drive**" is listed.

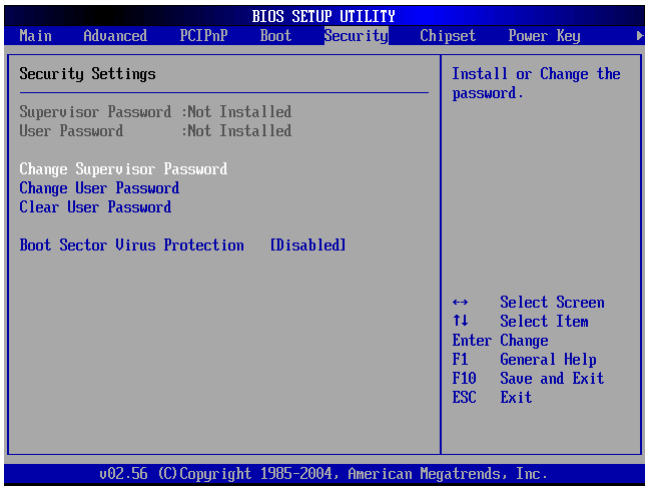
The boot sequence from the available devices is selected. If the "**1st Drive**" option is selected a list of available FDDs is shown. Select the first FDD the system boots from. If the "**1st Drive**" is not used for booting this option may be disabled.



BIOS Menu 19: Removable Drives

6.6 Security

Use the Security menu (**BIOS Menu 20**) to set system and user passwords.



BIOS Menu 20: Security

➔ Change Supervisor Password

Use the Change Supervisor Password to set or change a supervisor password. The default for this option is Not Installed. If a supervisor password must be installed, select this field and enter the password. After the password has been added, Install appears next to Change Supervisor Password.

➔ User Access Level [Full Access]

A supervisor password must be installed to make this option available. The **User Access Level** option specifies the access a normal user has to the BIOS settings.

➔ **No Access**		Users have no access to the **Setup Utility**
➔ **View Only**		Users can only view the **Setup Utility**
➔ **Limited**		Users can change limited fields like date and time
➔ **Full Access**	**DEFAULT**	Users have full access to the **Setup Utility**

➔ **Change User Password**

Use the Change User Password to set or change a user password. The default for this option is Not Installed. If a user password must be installed, select this field and enter the password. After the password has been added, Install appears next to Change User Password.

➔ **Clear User Password**

A user password must be installed to make this option available. Use the **Clear User Password** option to delete a user password.

➔ **Password Check [Setup]**

A supervisor password must be installed to make this option available. The **Password Check** option specifies when a user is prompted for the password.

➔ **Setup**	**DEFAULT**	Users have to enter their password only when they enter the **Setup Utility**
➔ **Always**		Users have to enter their password whenever they boot the computer

➔ **Boot Sector Virus Protection [Disabled]**

Use the **Boot Sector Virus Protection** to enable or disable boot sector protection.

➔ **Disabled**	**DEFAULT**	Disables the boot sector virus protection
➔ **Enabled**		Enables the boot sector virus protection

6.7 Chipset

Use the Chipset menu (**BIOS Menu 21**) to access the NorthBridge and SouthBridge configuration menus.

WARNING!

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.

BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Power Key
Advanced Chipset Settings
WARNING: Setting wrong values in below sections may cause system to malfunction.
North Bridge Configuration
South Bridge Configuration
Configure North Bridge features.
↔ Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
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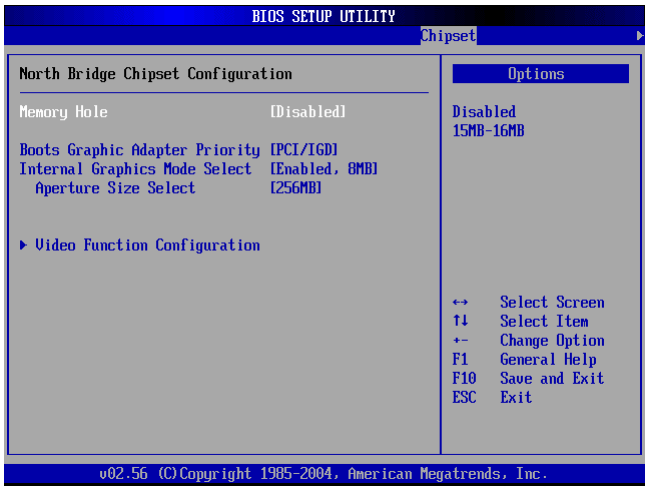
BIOS Menu 21: Chipset

6.7.1 NorthBridge Configuration

Use the **NorthBridge Configuration** menu (BIOS Menu 22) to configure the northbridge chipset.



BIOS Menu 22:NorthBridge Chipset Configuration

➔ **Memory Hole [Disabled]**

Use the **Memory Hole** option to reserve memory space between 15MB and 16MB for ISA expansion cards that require a specified area of memory to work properly. If an older ISA expansion card is used, please refer to the documentation that came with the card to see if it is necessary to reserve the space.

➔ **Disabled**	**DEFAULT**	Memory is not reserved for ISA expansion cards
➔ **15MB – 16MB**		Between 15MB and 16MB of memory is reserved for ISA expansion cards

➔ **Boots Graphics Adapter [PCI/IGD]**

Use the **Boots Graphics Adapter** option to select the graphics controller used as the primary boot device. Select either an integrated graphics controller (IGD) or a combination of PCI graphics controller, a PCI express (PEG) controller or an IGD. Configuration options are listed below:

- IGD
- PEG/IGD
- PEG/PCI
- PCI/PEG
- PCI/IGD **DEFAULT**

➔ **Internal Graphics Mode Select [Enabled, 8MB]**

Use the **Internal Graphic Mode Select** option to specify the amount of system memory that can be used by the Internal graphics device.

➔ **Disabled**

➔ **Enabled, 1MB** 1MB of memory used by internal graphics device

➔ **Enabled, 8MB** **DEFAULT** 8MB of memory used by internal graphics device

➔ **Aperture Size Select [256MB]**

Use the **Aperture Size Select** option to select the size of the AGP aperture and the size of the GART (Graphics Address Relocation Table). The aperture is a portion on the PCI memory address range dedicated for use as AGP memory address space and the GART is a translation table that translates the AGP memory addresses into actual addresses. The following options are available.

- 32MB
- 64MB
- 128MB
- 256MB **DEFAULT**

6.7.1.1 Video Function Configuration

Use the **Video Function Configuration** menu to configure the video device connected to the system.

➔ **DVMT Mode Select [Combo Mode]**

Use the **DVMT Mode Select** option to select the Intel Dynamic Video Memory Technology (DVMT) operating mode.

➔ **Fixed Mode**		A fixed portion of graphics memory is reserved as graphics memory.
➔ **DVMT Mode**		Graphics memory is dynamically allocated according to the system and graphics needs.
➔ **Combo Mode**	**DEFAULT**	A fixed portion of graphics memory is reserved as graphics memory. If more memory is needed, graphics memory is dynamically allocated according to the system and graphics needs.

➔ **DVMT/FIXED Memory**

Use the **DVMT/FIXED Memory** option to specify the maximum amount of memory that can be allocated as graphics memory. This option can only be configured for if **DVMT Mode** or **Fixed Mode** is selected in the **DVMT Mode Selec**t option. If **Combo Mode** is selected, the maximum amount of graphics memory is 128MB. Configuration options are listed below.

- 64MB
- 128MB **DEFAULT**

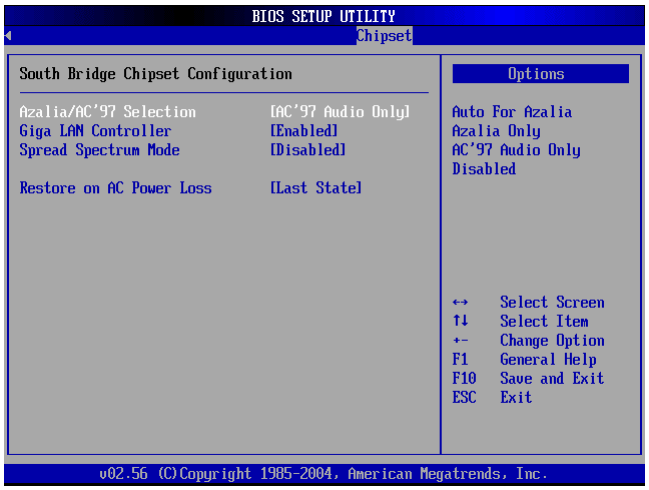
➔ **Boot Display Device [CRT]**

The **Boot Display Device** BIOS option selects the display device the system uses when it boots. The available options are listed below:

- Auto
- CRT
- EFP
- CRT + EFP **DEFAULT**

6.7.2 SouthBridge Chipset Configuration

The **SouthBridge Chipset Configuration** menu (BIOS Menu 23) the southbridge chipset to be configured.



BIOS Menu 23:SouthBridge Chipset Configuration

➔ **Azalia/AC97 Selection [AC'97 Audio Only]**

Use the **Azalia/AC97 Selection** option to enable or disable the Azalia or AC'97 CODECs.

➔ **Auto for Azalia**		The on-board Azalia audio controller is automatically detected and enabled.
➔ **Azalia Only**		The on-board Azalia audio controller is enabled.
➔ **AC'97 Audio Only**	**DEFAULT**	The on-board AC'97 audio controller is enabled.
➔ **Disabled**		The on-board Azalia/AC'97 audio controller is disabled.

➔ **Giga LAN Controller [Enabled]**

The **Giga LAN Controller** option enables or disables the on-board LAN.

➔	**Enabled**	**DEFAULT**	The onboard LAN device automatically detected and enabled
➔	**Disabled**		Onboard LAN device manually disabled

➔ **Spread Spectrum Mode [Disabled]**

Use the **Spread Spectrum Mode** option to reduce the EMI. Excess EMI is generated when the system clock generator pulses have extreme values. Spreading the pulse spectrum modulates changes in the extreme values from spikes to flat curves, thus reducing the EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device.

➔	**Disabled**	**DEFAULT**	EMI not reduced
➔	**Enabled**		EMI reduced

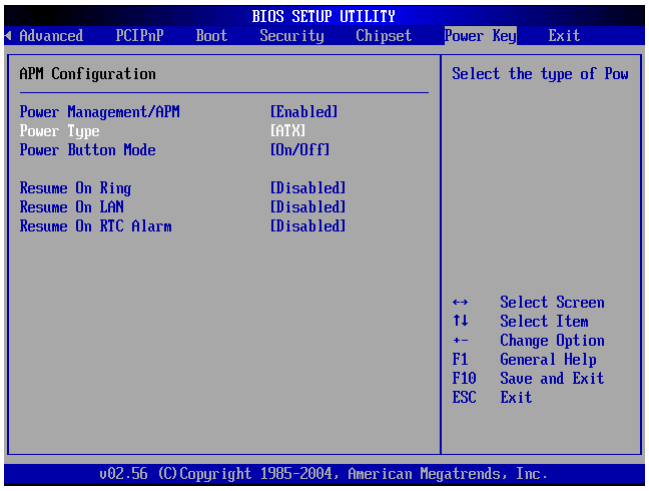
➔ **Restore on AC Power Loss [Last State]**

The Restore on AC Power Loss BIOS option specifies what state the system returns to if there is a sudden loss of power to the system.

➔	**Power Off**		The system remains turned off
➔	**Power On**		The system turns on
➔	**Last State**	**DEFAULT**	The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

6.8 Power

The **Power** menu (**BIOS Menu 24**) allows the advanced power management options to be configured.



BIOS Menu 24: Power

➔ **Power Management/APM [Enabled]**

The **Power Management/APM** BIOS option accesses the advanced power management features.

➔ **Disabled** Disables the Advanced Power Management (APM) feature

➔ **Enabled** **DEFAULT** Enables the APM feature

➔ **Power Type [AT]**

Use the **Power Type** BIOS option to select the power supply that is connected to the system.

➔ **AT** **DEFAULT** An AT power supply is connected to the system

➔ **ATX** An ATX power supply is connected to the system

➔ **Power Button Mode [On/Off]**

The **Power Button Mode** BIOS specifies how the power button functions.

➔ **On/Off**	**DEFAULT**	When the power button is pressed the system is either turned on or off
➔ **Standby**		When the power button is pressed the system goes into standby mode
➔ **Suspend**		When the power button is pressed the system goes into suspend mode

➔ **Resume on Ring [Disabled]**

Use the **Resume on Ring** option to enable the system to be roused from a suspended or standby state when there is activity on the RI (ring in) modem line. That is, the system is roused by an incoming call on a modem.

➔ **Disabled**	**DEFAULT**	Wake event not generated by an incoming call
➔ **Enabled**		Wake event generated by an incoming call

➔ **Resume on Lan [Disabled]**

The **Resume on Lan** BIOS option specifies if the system is roused from a suspended or standby state when there is activity on the LAN.

➔ **Disabled**	**DEFAULT**	Wake event not generated by LAN activity
➔ **Enabled**		Wake event generated by LAN activity

➔ **Resume On RTC Alarm [Disabled]**

Use the **Resume On RTC Alarm** option to specify the time the system should be roused from a suspended state.

➔ **Disabled** **DEFAULT** The real time clock (RTC) cannot generate a wake event

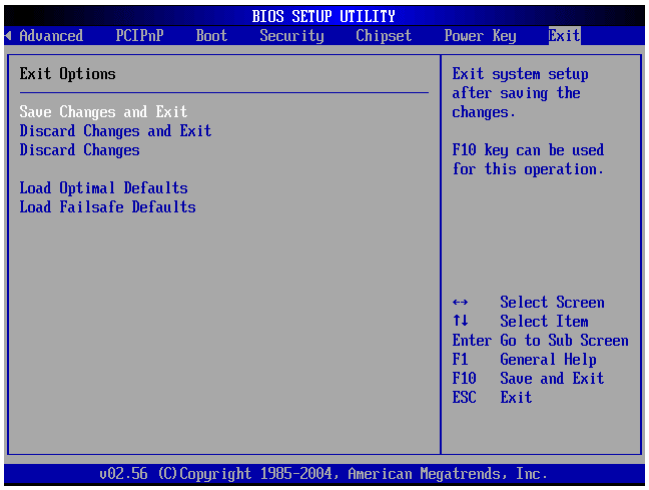
➔ **Enabled** If selected, the following appears with values that can be selected:

- ➔ **RTC Alarm Date (Days)**
- ➔ **System Time**

After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

6.9 Exit

Use the Exit menu (**BIOS Menu 25**) to load default BIOS values, optimal failsafe values and to save configuration changes.


BIOS SETUP UTILITY
Advanced PCIPnP Boot Security Chipset Power Key Exit
Exit Options
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load Optimal Defaults
Load Failsafe Defaults
Exit system setup after saving the changes.
F10 key can be used for this operation.
↔ Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
v02.56 (C)Copyright 1985-2004, American Megatrends, Inc.

BIOS Menu 25:Exit

➔ **Save Changes and Exit**

Use the Save Changes and Exit option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

➔ **Discard Changes and Exit**

Use the Discard Changes and Exit option to exit the BIOS configuration setup program without saving the changes made to the system.

➔ **Discard Changes**

Use the Discard Changes option to discard the changes and remain in the BIOS configuration setup program.

➔ **Load Optimal Defaults**

Use the Load Optimal Defaults option to load the optimal default values for each of the parameters on the Setup menus. F9 key can be used for this operation.

➔ **Load Failsafe Defaults**

Use the Load Failsafe Defaults option to load failsafe default values for each of the parameters on the Setup menus. F8 key can be used for this operation.

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Chapter

7

Driver Installation

7.1 Available Software Drivers

NOTE:

The content of the CD may vary throughout the life cycle of the product and is subject to change without prior notice. Visit the IEI website or contact technical support for the latest updates.

The following drivers can be installed on the system:

- Intel® Chipset driver
- VGA driver (Intel® Graphics Media Accelerator Driver)
- LAN driver (Broadcom LAN Driver (for GbE LAN))
- Audio driver (Realtek AC`97 Audio Driver (ALC665))
- Audio driver (Realtek HD Audio Driver (ALC883))
- IDE controller (IT8211)

Installation instructions are given below.

7.2 Driver CD Auto-run

All the drivers for the WSB-9154 are on the CD that came with the system. To install the drivers, please follow the steps below.

Step 1: Insert the CD into a CD drive connected to the system.

NOTE:

If the system does not initiate the "autorun" program when the CD is inserted, click the **Start** button, select **Run**, then type **X:\autorun.exe** (where **X:** is the system CD drive) to access the IEI Driver CD main menu.

Step 2: The driver main menu appears (Figure 7-1).

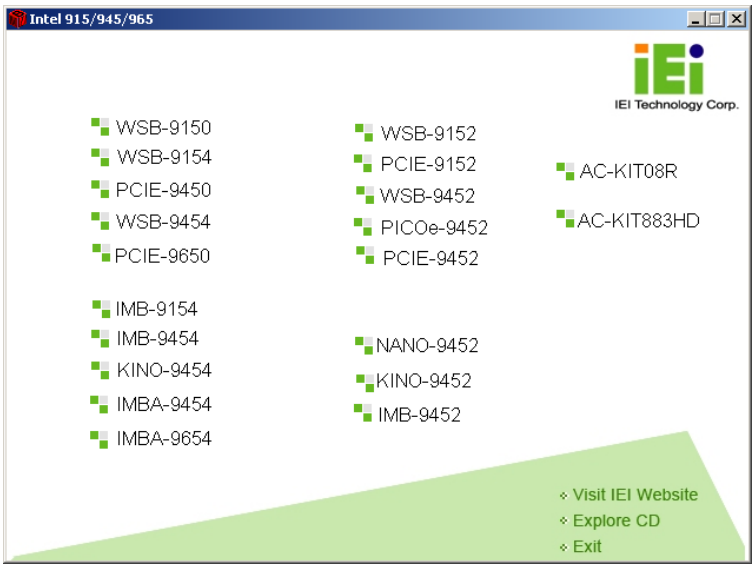

Figure 7-1: Introduction Screen

Step 3: Click **WSB-9154**.

Step 4: A new screen with a list of available drivers appears (Figure 7-2).

Figure 7-2: Available Drivers

Step 5: Select the driver to install from the list in **Figure 7-2**. Detailed driver installation instructions follow below.

7.3 Intel® Chipset Driver Installation

To install the chipset driver, please follow the steps below.

Step 1: Select **INF** from the list in **Figure 7-2**.

Step 2: A new window opens (Figure 7-3).

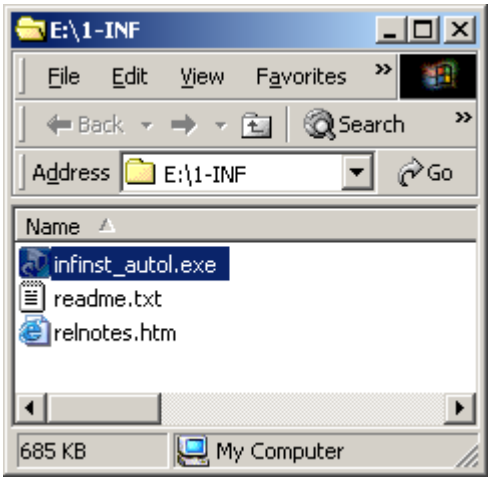

Figure 7-3: Chipset Driver Installation Program

Step 3: Double-click the **infinst_Autol.exe** icon.

Step 4: The welcome screen in Figure 7-4 appears.

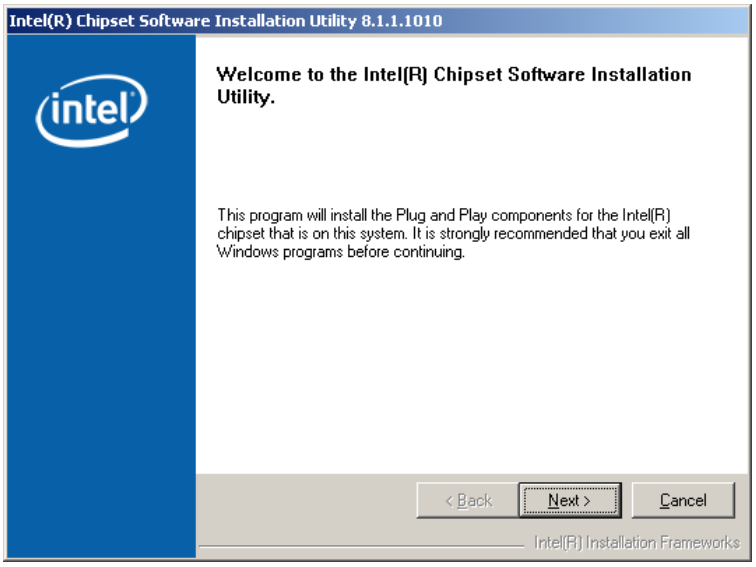
Intel(R) Chipset Software Installation Utility 8.1.1.1010
Welcome to the Intel(R) Chipset Software Installation Utility.
This program will install the Plug and Play components for the Intel(R) chipset that is on this system. It is strongly recommended that you exit all Windows programs before continuing.
< Back
Next >
Cancel
Intel(R) Installation Frameworks

Figure 7-4: Chipset Driver Installation Welcome Screen

Step 5: Click **NEXT** to continue the installation process.

Step 6: The license agreement in Figure 7-5 appears.

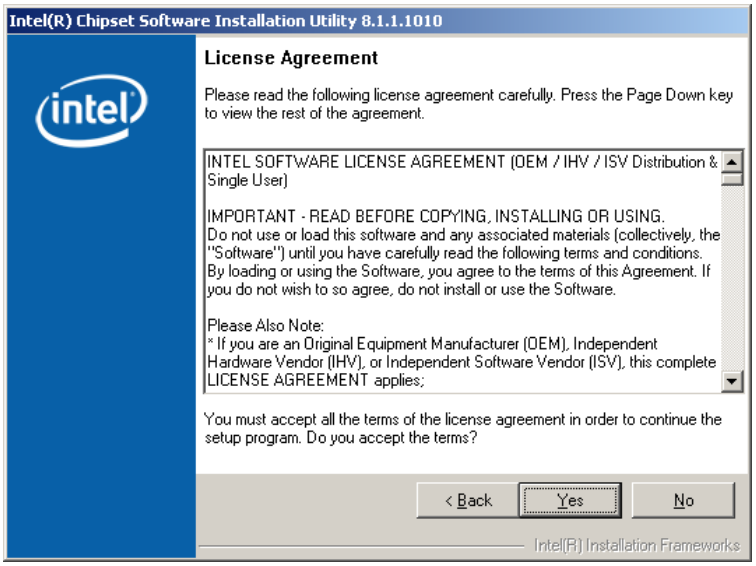
Intel(R) Chipset Software Installation Utility 8.1.1.1010
License Agreement
Please read the following license agreement carefully. Press the Page Down key to view the rest of the agreement.
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
You must accept all the terms of the license agreement in order to continue the setup program. Do you accept the terms?
< Back
Yes
No
Intel(R) Installation Frameworks

Figure 7-5: Chipset Driver Installation License Agreement

Step 7: Read the license agreement. To accept the terms and conditions stipulated in the agreement, click **YES**.

Step 8: The Readme file in Figure 7-6 appears.

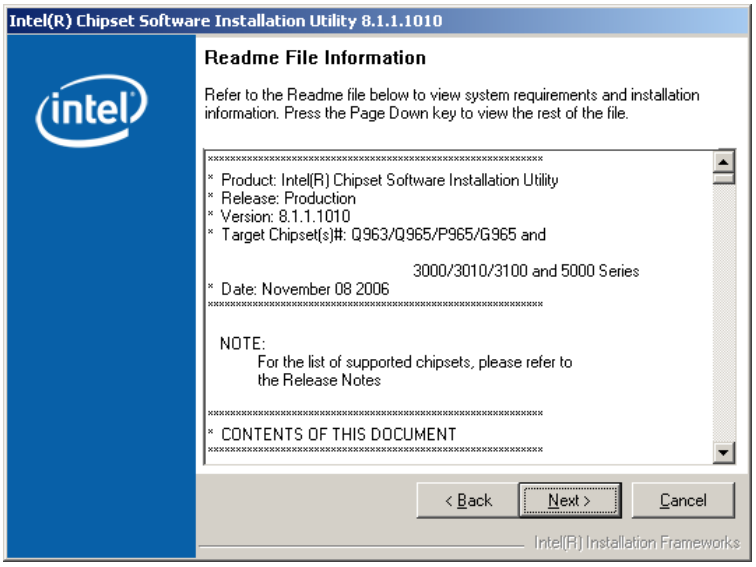
Intel(R) Chipset Software Installation Utility 8.1.1.1010
Readme File Information
Refer to the Readme file below to view system requirements and installation information. Press the Page Down key to view the rest of the file.
* Product: Intel(R) Chipset Software Installation Utility
* Release: Production
* Version: 8.1.1.1010
* Target Chipset(s)#: Q963/Q965/P965/G965 and
3000/3010/3100 and 5000 Series
* Date: November 08 2006
NOTE:
For the list of supported chipsets, please refer to the Release Notes
* CONTENTS OF THIS DOCUMENT
< Back
Next >
Cancel
Intel(R) Installation Frameworks

Figure 7-6: Chipset Driver Readme File Information

Step 9: Read the Readme file information and then click **NEXT** to start the driver installation.

Step 10: After the driver installation process is complete, a confirmation screen appears (Figure 7-7).

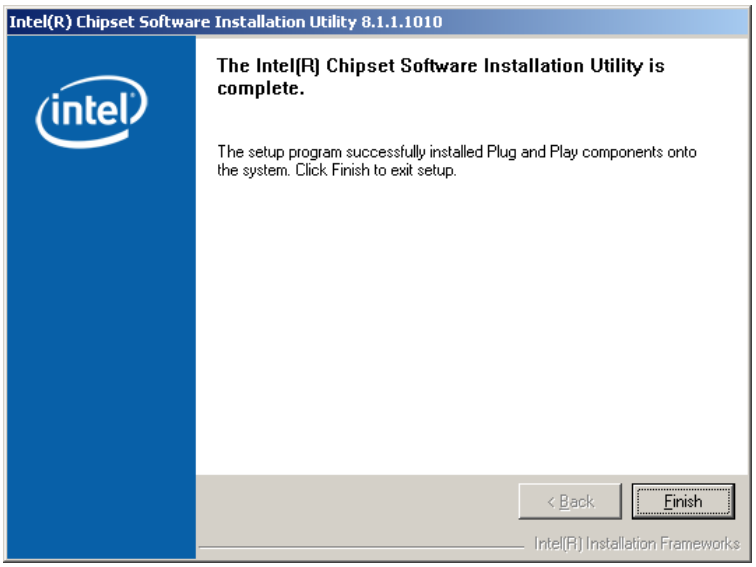
Intel(R) Chipset Software Installation Utility 8.1.1.1010
The Intel(R) Chipset Software Installation Utility is complete.
The setup program successfully installed Plug and Play components onto the system. Click Finish to exit setup.
< Back
Finish
Intel(R) Installation Frameworks

Figure 7-7: Chipset Driver Installation Complete

Step 11: Click **FINISH** to complete the driver installation.

7.4 Intel® Graphics Media Accelerator Driver Installation

To install the chipset driver, please follow the steps below.

Step 1: Select the VGA driver from the list in **Figure 7-2**.

Step 2: A new window opens (Figure 7-8).

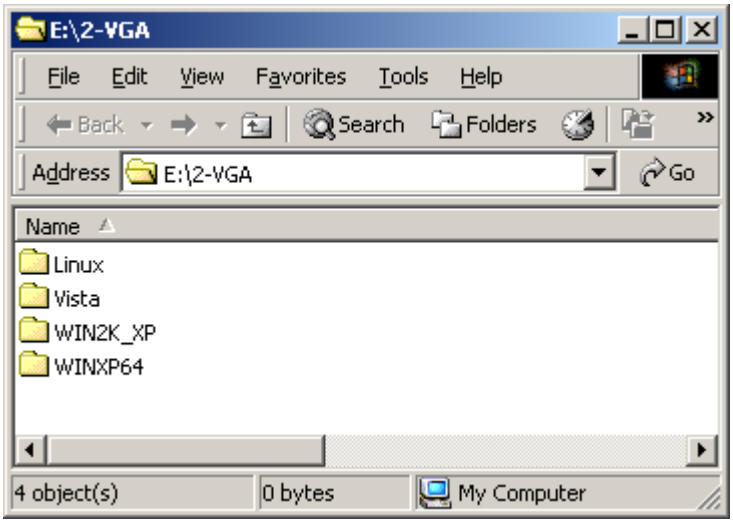

Figure 7-8: Select the Operating System

Step 3: Double-click the appropriate operating system folder.

Step 4: A new window appears (Figure 7-9).

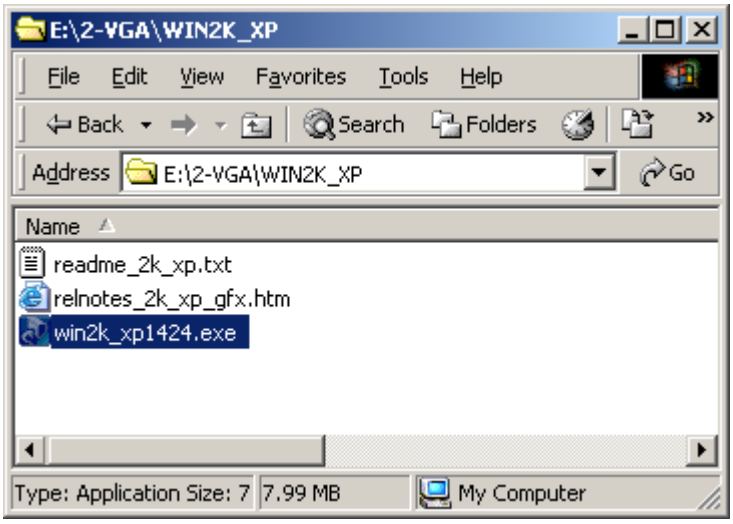

Figure 7-9: VGA Driver

Step 5: Double-click the installation program icon to continue the installation process.

Step 6: The Readme information file shown in Figure 7-10 appears.

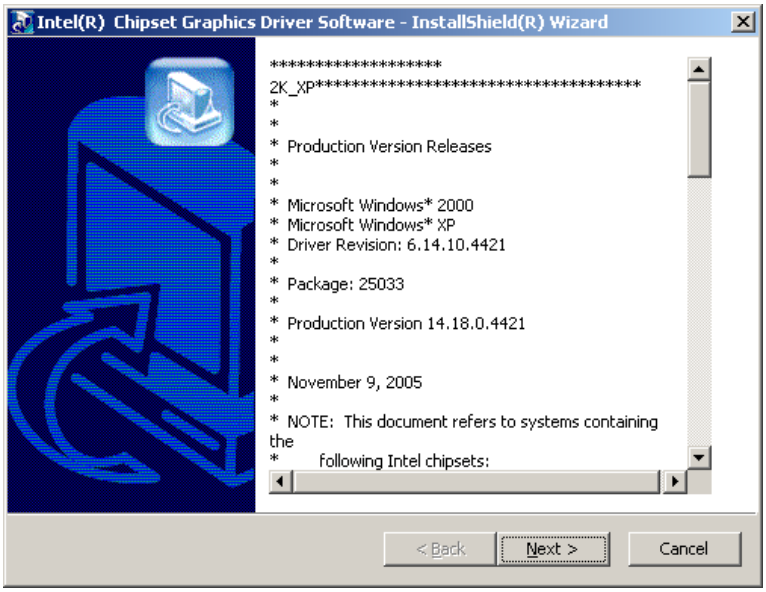

Figure 7-10: Intel® Graphics Media Accelerator InstallShield Wizard

Step 7: Read the Readme file information and click **NEXT** to begin extracting files (Figure 7-11).

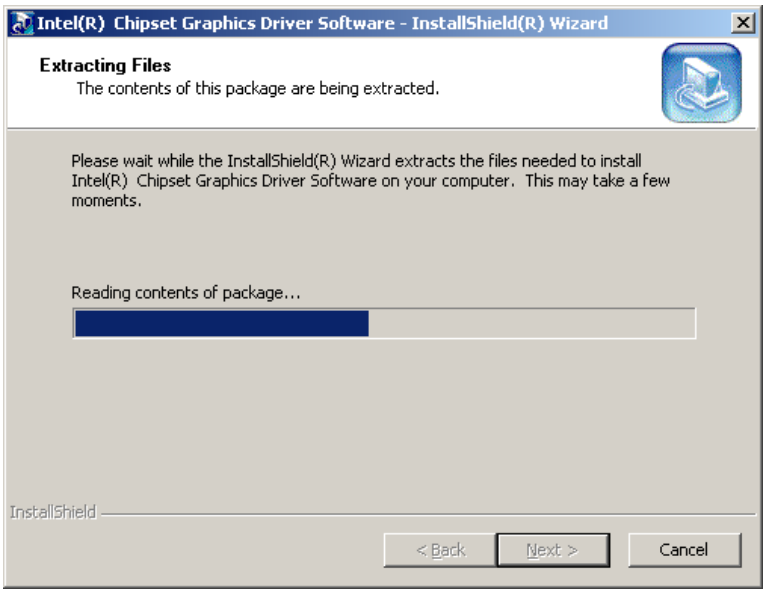
Intel(R) Chipset Graphics Driver Software - InstallShield(R) Wizard
Extracting Files
The contents of this package are being extracted.
Please wait while the InstallShield(R) Wizard extracts the files needed to install Intel(R) Chipset Graphics Driver Software on your computer. This may take a few moments.
Reading contents of package...
InstallShield
< Back
Next >
Cancel

Figure 7-11: InstallShield Wizard Extracting Files

Step 8: The **Graphics Media Accelerator Driver Welcome** screen appears (Figure 7-12).

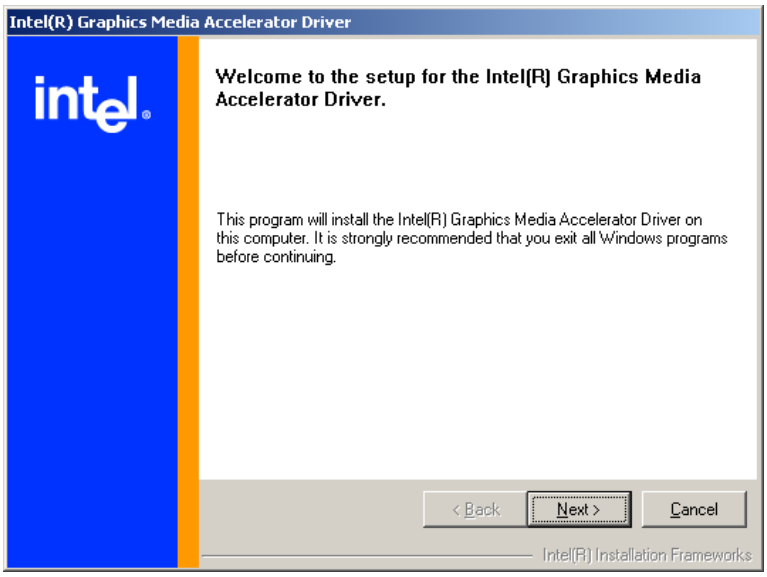
Intel(R) Graphics Media Accelerator Driver
intel
Welcome to the setup for the Intel(R) Graphics Media Accelerator Driver.
This program will install the Intel(R) Graphics Media Accelerator Driver on this computer. It is strongly recommended that you exit all Windows programs before continuing.
< Back
Next >
Cancel
Intel(R) Installation Frameworks

Figure 7-12: Intel® Graphics Media Accelerator Driver Welcome Screen

Step 9: Click **NEXT** and a license agreement appears (Figure 7-13).

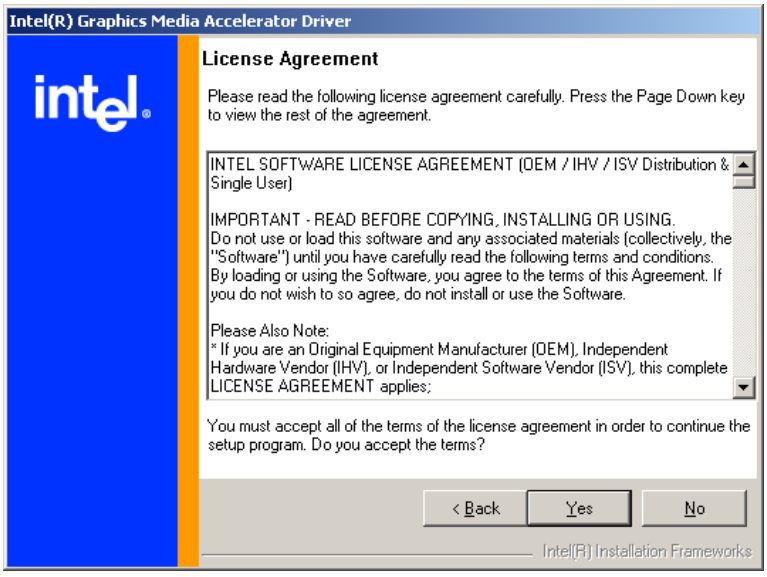
Intel(R) Graphics Media Accelerator Driver
intel
License Agreement
Please read the following license agreement carefully. Press the Page Down key to view the rest of the agreement.
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
< Back
Yes
No
Intel(R) Installation Frameworks

Figure 7-13: Intel® Graphics Media Accelerator Driver License Agreement

Step 10: Read the license agreement. To accept the terms and conditions stipulated in the license agreement shown, click **YES** and the installation notice appears (Figure 7-14) as the driver is installed.

Figure 7-14: Intel® Graphics Media Accelerator Driver Installing Notice

Step 11: After the driver installation process is complete, a confirmation screen appears (Figure 7-15).

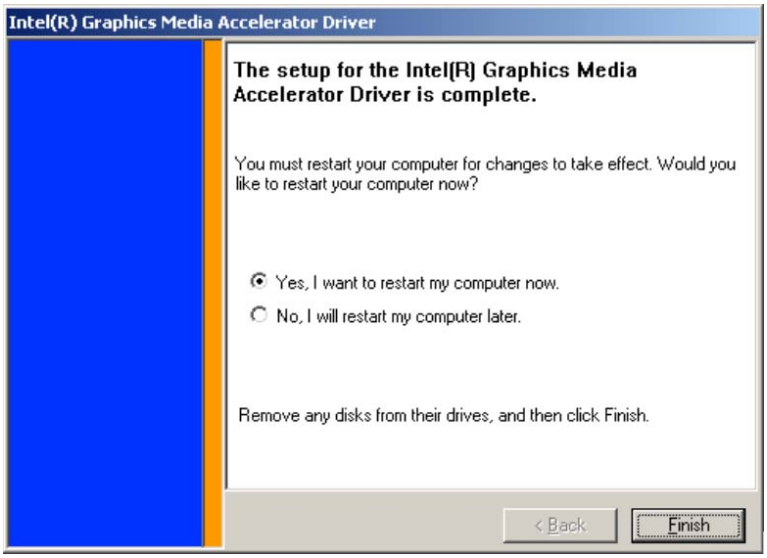
Intel(R) Graphics Media Accelerator Driver
The setup for the Intel(R) Graphics Media Accelerator Driver is complete.
You must restart your computer for changes to take effect. Would you like to restart your computer now?
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish.
< Back
Finish

Figure 7-15: Intel® Graphics Media Accelerator Installation Complete

Step 12: The confirmation screen offers the option of restarting the computer now or later. For the settings to take effect, the computer must be restarted. Click **FINISH** to restart the computer.

7.5 Broadcom LAN Driver (for GbE LAN) Installation

To install the Broadcom LAN driver, please follow the steps below.

Step 1: Open **Windows Control Panel (**Figure 7-16).

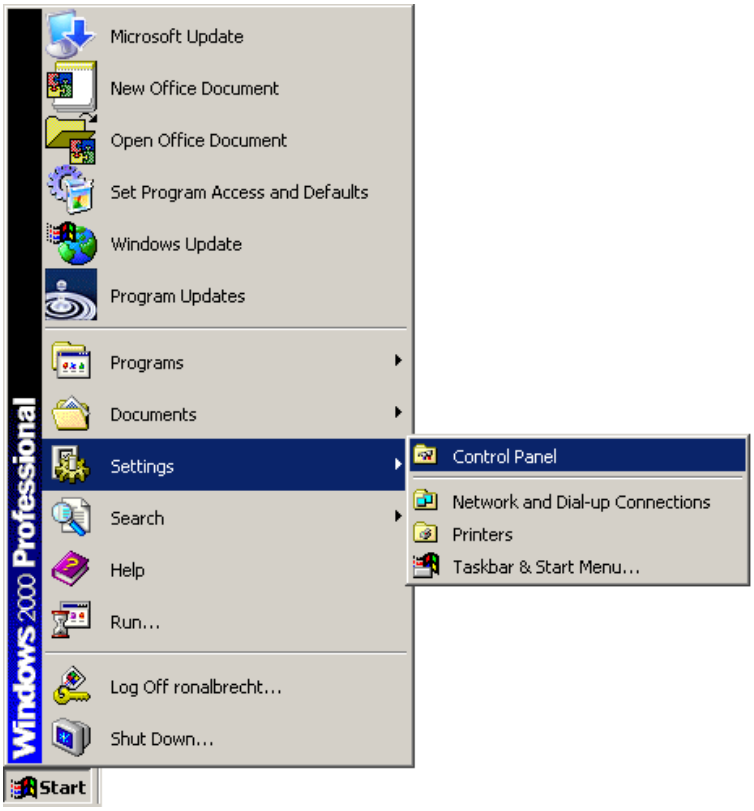

Figure 7-16: Windows Control Panel

Step 2: Double-click the **System** icon (Figure 7-17).

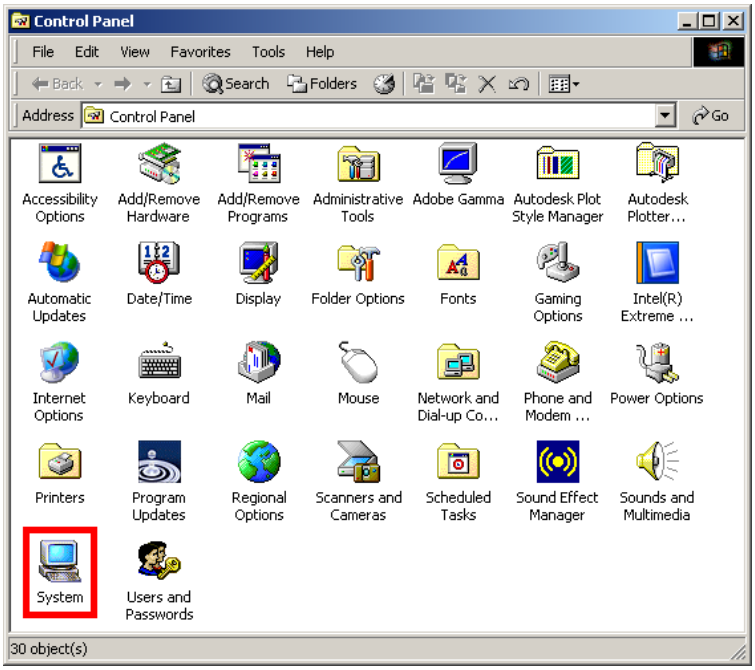

Figure 7-17: System Icon

Step 3: Click the **Device Manager** tab (Figure 7-18).

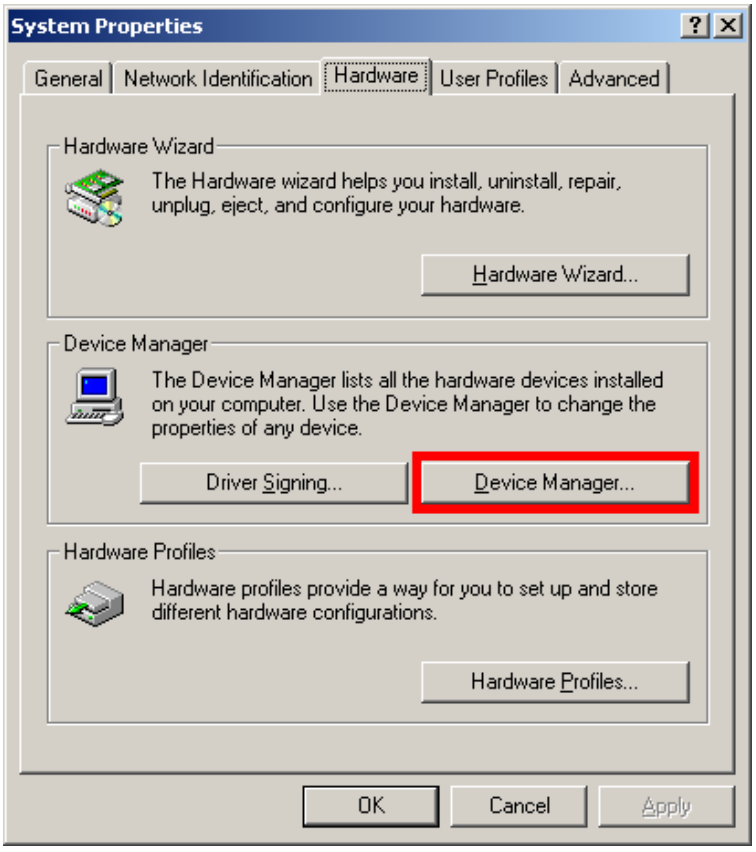
System Properties
General
Network Identification
Hardware
User Profiles
Advanced
Hardware Wizard
The Hardware wizard helps you install, uninstall, repair, unplug, eject, and configure your hardware.
Hardware Wizard...
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Driver Signing...
Device Manager...
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles...
OK
Cancel
Apply

Figure 7-18: Device Manager Tab

Step 4: A list of system hardware devices appears (Figure 7-19).

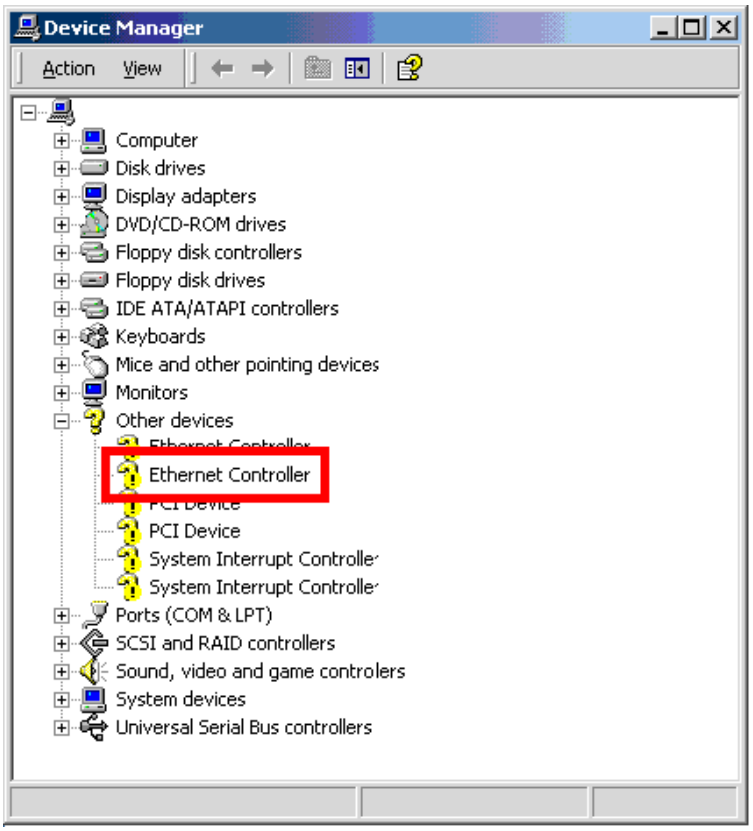

Figure 7-19: Device Manager List

Step 5: Double-click the listed device that has question marks next to it (this means Windows does not recognize the device).

Step 6: The **Device Driver Wizard** appears (Figure 7-20).

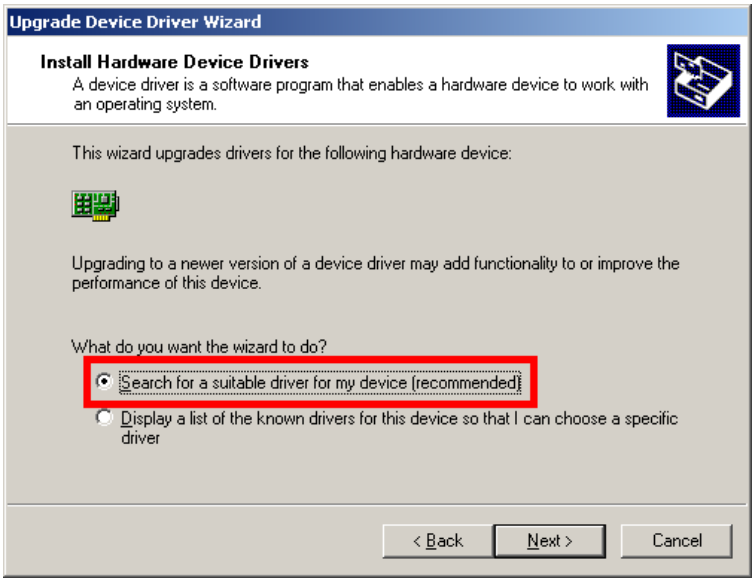
Upgrade Device Driver Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard upgrades drivers for the following hardware device:
Upgrading to a newer version of a device driver may add functionality to or improve the performance of this device.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

Figure 7-20: Search for Suitable Driver

Step 7: Select "**Search for a suitable driver for my device (recommended)**," and click **NEXT** to continue.

Step 8: Select "**Specify a Location**" in the **Locate Driver Files** window (Figure 7-21).

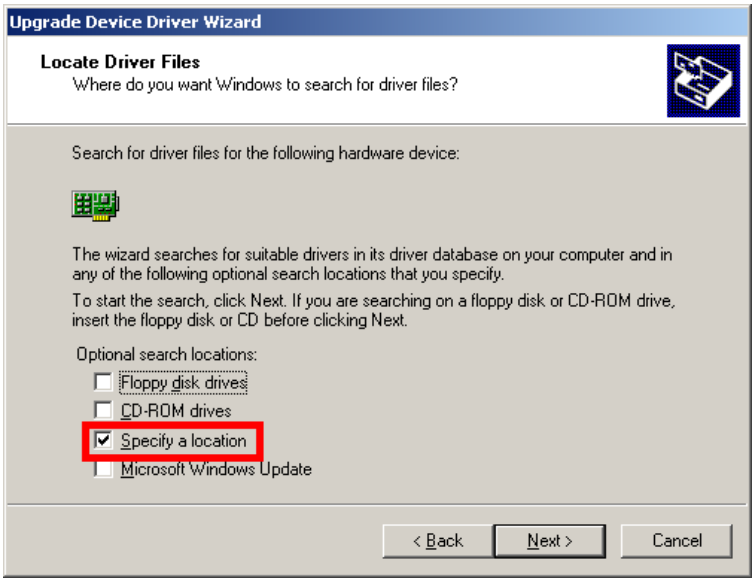
Upgrade Device Driver Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

Figure 7-21: Locate Driver Files

Step 9: Click **NEXT** to continue.

Step 10: The **Locate File** window appears (Figure 7-22).

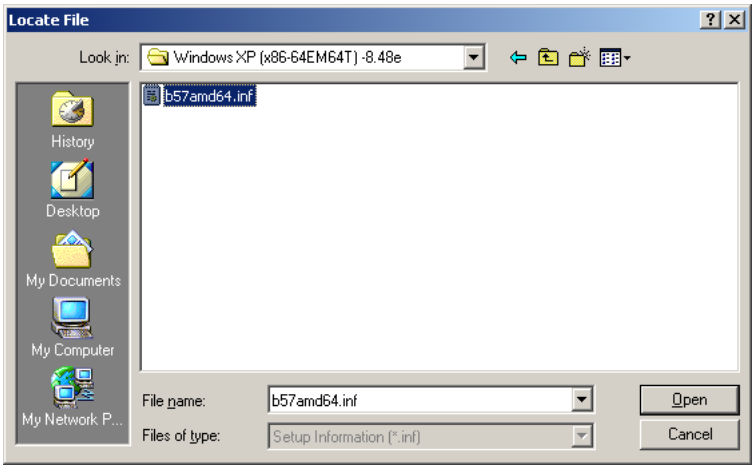

Figure 7-22: Location Browsing Window

Step 11: Select the proper OS folder under the "**X:\3-LAN\BROADCOM BCM57xx Drivers**" directory in the **Locate File** window, where "**X:\"** is the system CD drive.

Step 12: Click **OPEN** and the driver is installed.

7.6 Realtek AC`97 Audio Driver (ALC665) Installation

To install the Realtek AC `97 audio driver, please follow the steps below.

7.6.1 BIOS Setup

Step 1: Enter the BIOS setup. To do this, reboot the system and press **DEL** during POST.

Step 2: Go to the Southbridge Configuration menu. Set the **Audio Controller** option to [AC`97].

Step 3: Press **F10** to save the changes and exit the BIOS setup. The system reboots.

7.6.2 Driver Installation

To install the audio driver please follow the steps below.

Step 1: Select **AUDIO** from the list in **Figure 7-2**.

Step 2: A new window opens (Figure 7-23).

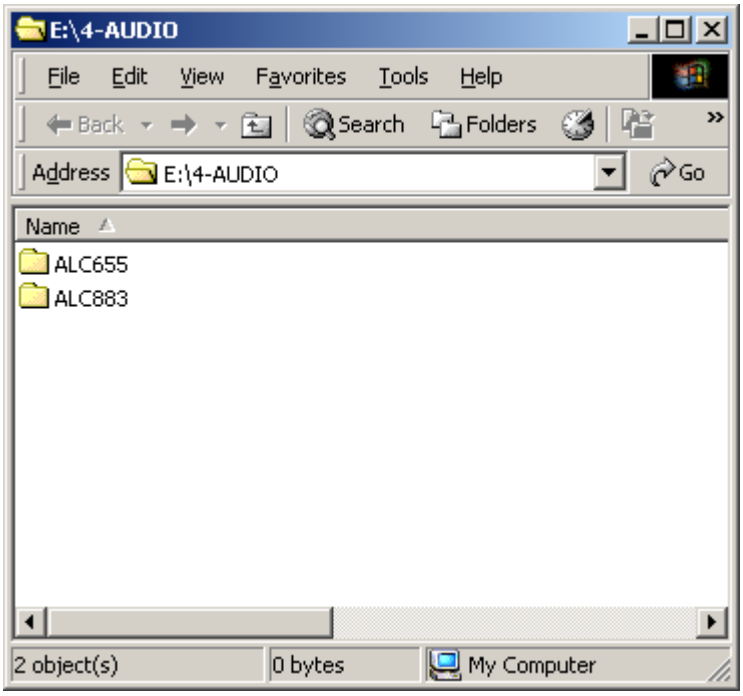

Figure 7-23: Select the Audio CODEC

Step 3: Double-click the ALC665 folder.

Step 4: Double-click the **Setup.exe** program icon in Figure 7-24.

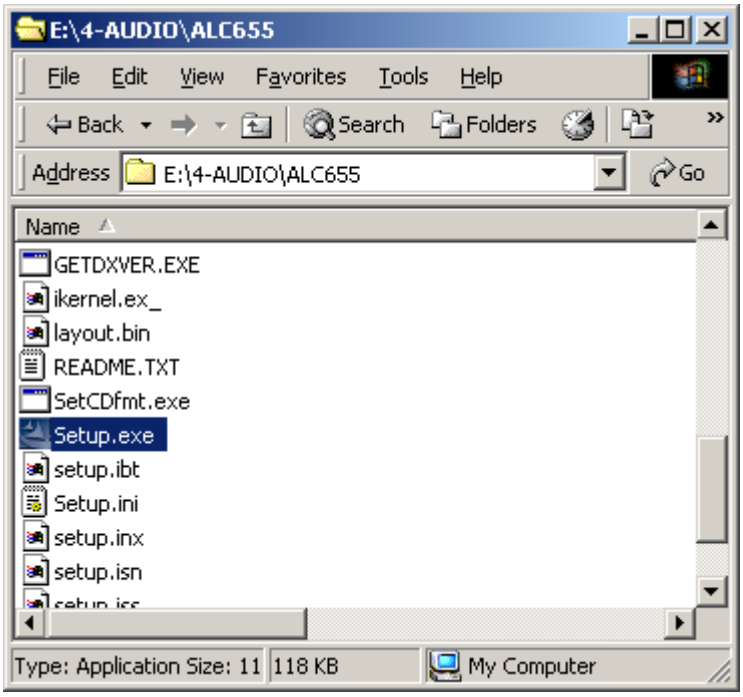

Figure 7-24: Locate the Setup Program Icon

Step 5: The **InstallShield Wizard** is prepared to guide the user through the rest of the process (Figure 7-25).

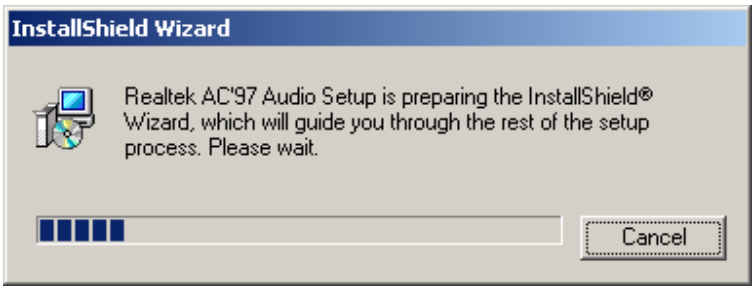
InstallShield Wizard
Realtek AC'97 Audio Setup is preparing the InstallShield® Wizard, which will guide you through the rest of the setup process. Please wait.
Cancel

Figure 7-25: Preparing Setup Screen

Step 6: Once initialized, the **InstallShield Wizard** welcome screen appears (Figure 7-26).

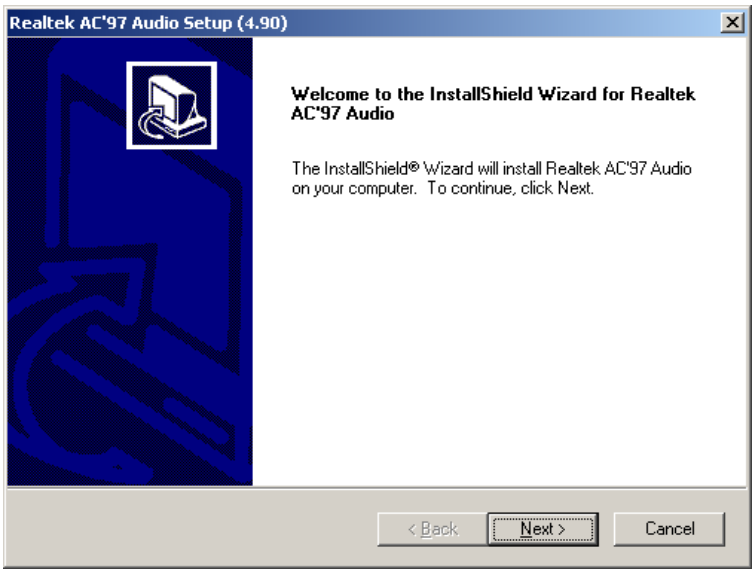
Realtek AC'97 Audio Setup (4.90)
Welcome to the InstallShield Wizard for Realtek AC'97 Audio
The InstallShield® Wizard will install Realtek AC'97 Audio on your computer. To continue, click Next.
< Back
Next >
Cancel

Figure 7-26: InstallShield Wizard Welcome Screen

Step 7: Click **NEXT** to continue the installation.

Step 8: InstallShield starts to install the new software as shown in Figure 7-27.

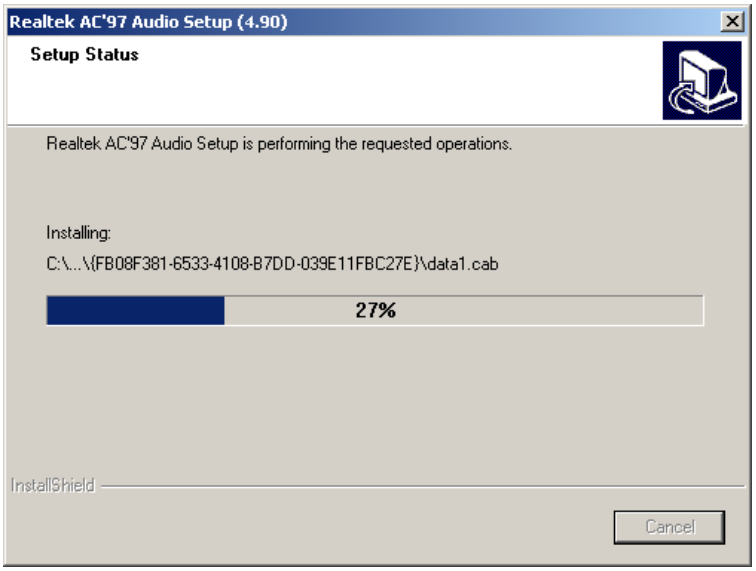

Figure 7-27: Audio Driver Software Configuration

Step 9: At this stage the **Digital Signal Not Found** screen shown in Figure 7-28 appears.

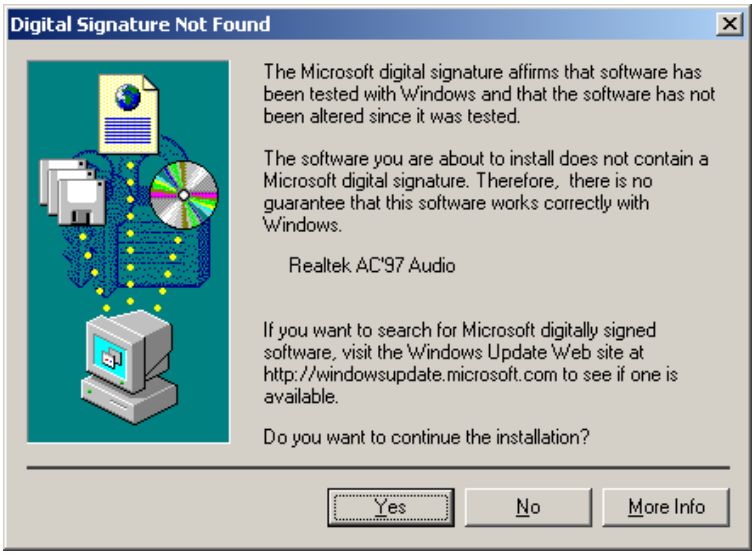
Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
Realtek AC'97 Audio
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

Figure 7-28: Audio Driver Digital Signal

Step 10: Click **YES** and the driver installation begins (Figure 7-29**)**.

Figure 7-29: Audio Driver Installation

Step 11: After the driver installation process is complete, a confirmation screen appears (Figure 7-30).

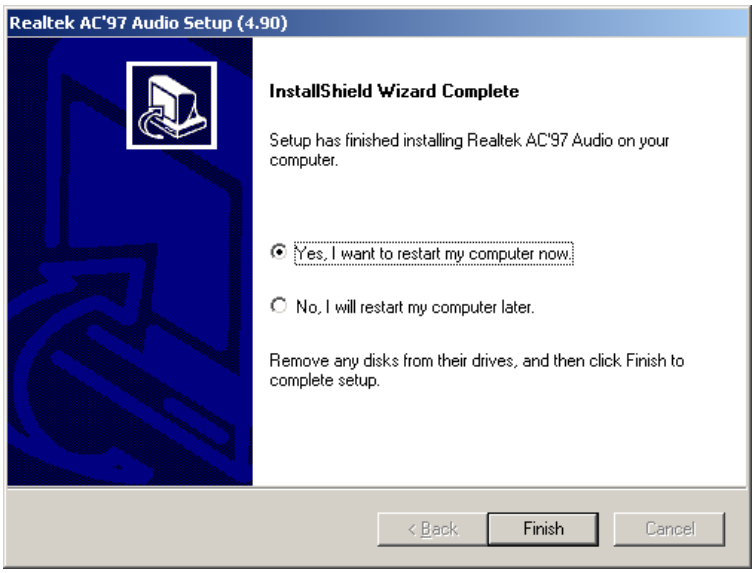
Realtek AC'97 Audio Setup (4.90)
InstallShield Wizard Complete
Setup has finished installing Realtek AC'97 Audio on your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

Figure 7-30: Restart the Computer

Step 12: The confirmation screen offers the option of restarting the computer now or later. For the settings to take effect, the computer must be restarted. Click **FINISH** to restart the computer.

7.7 Realtek HD Audio Driver (ALC883) Installation

To install the Realtek High Definition (HD) Audio driver, please follow the steps below.

7.7.1 BIOS Setup

Step 1: Enter the BIOS setup. To do this, reboot the system and press **DEL** during POST.

Step 2: Go to the Southbridge Configuration menu. Set the **Audio Controller** option to [Azalia].

Step 3: Press **F10** to save the changes and exit the BIOS setup. The system reboots.

7.7.2 Driver Installation

To install the audio driver please follow the steps below.

Step 1: Select **AUDIO** from the list in **Figure 7-2**.

Step 2: A new window opens (Figure 7-31).

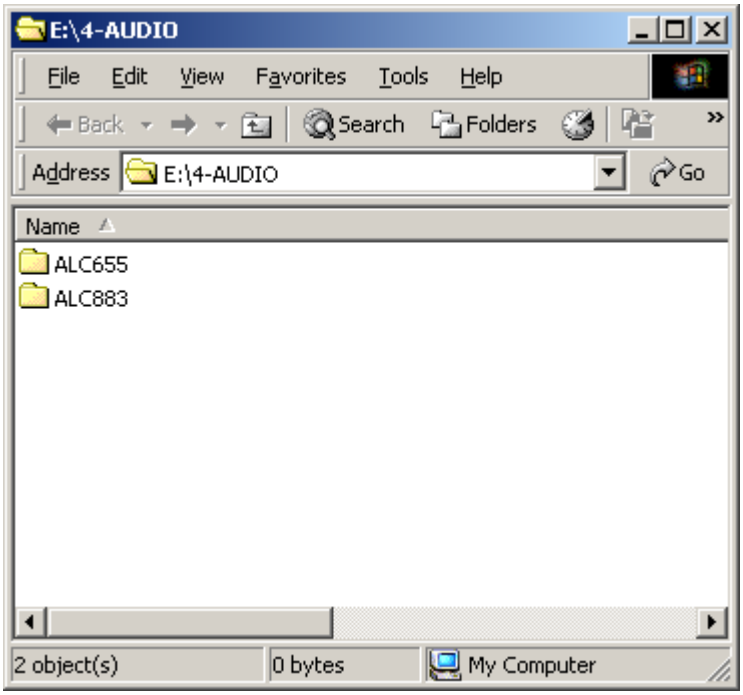

Figure 7-31: Select the Audio CODEC

Step 3: Double-click the ALC883 folder.

Step 4: Double-click the appropriate operating system folder (Figure 7-32).

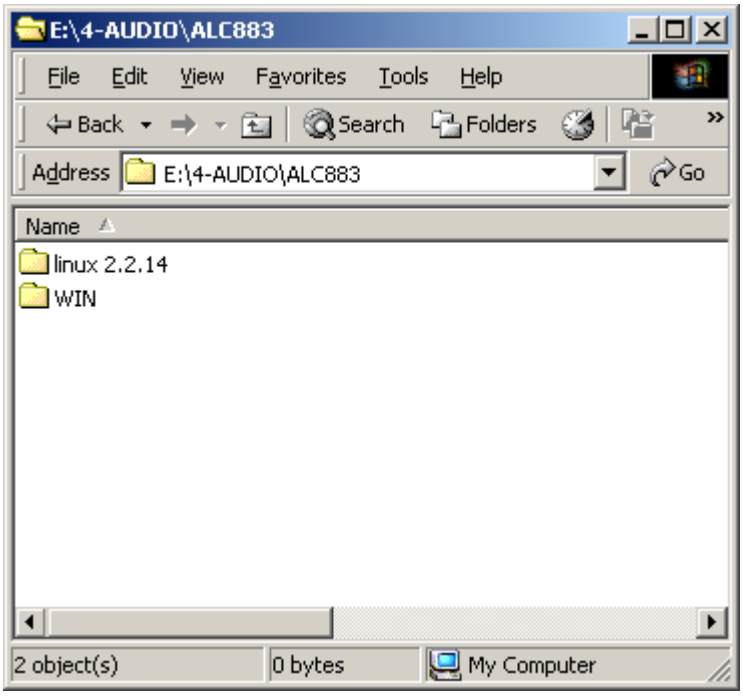

Figure 7-32: Select the OS

Step 5: Double-click the appropriate operating system version folder (Figure 7-33).

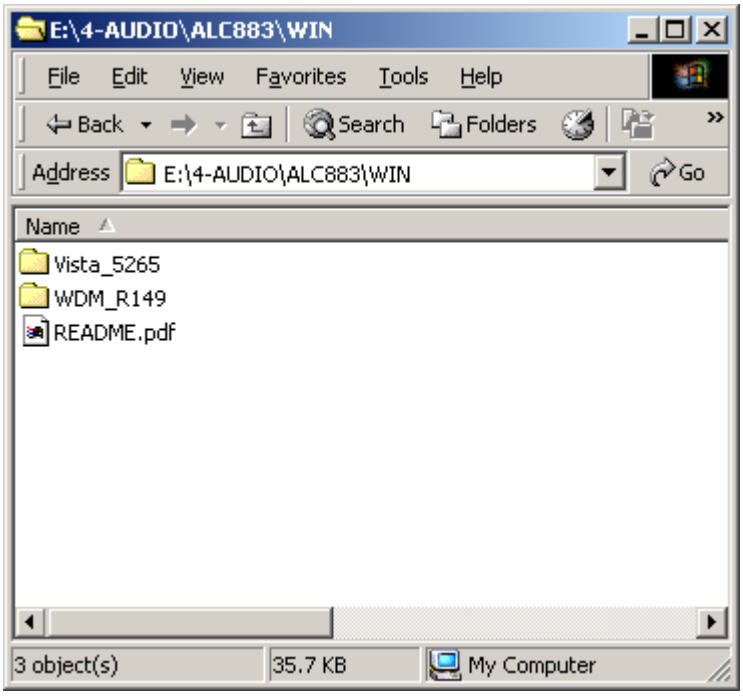

Figure 7-33: Select the OS Version

Step 6: Double-click the **Setup.exe** program icon in Figure 7-34.

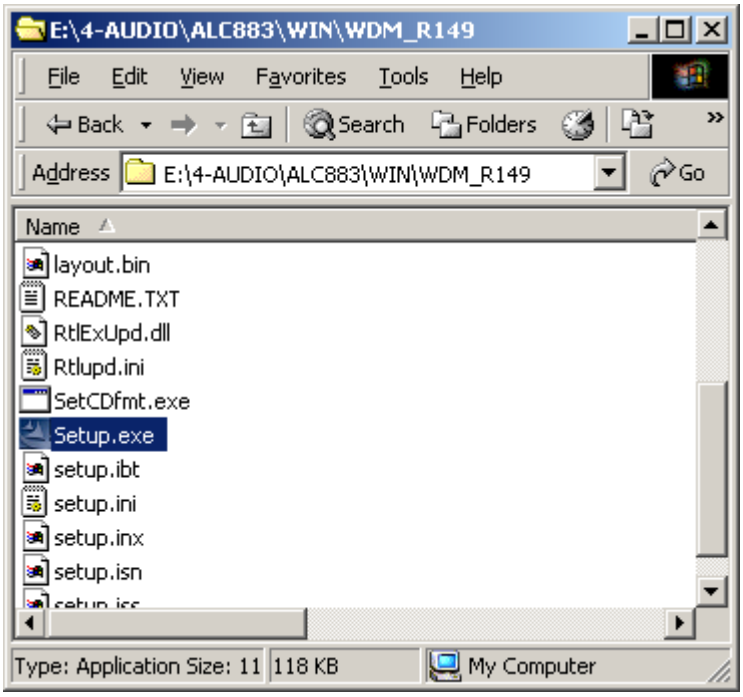

Figure 7-34: Locate the Setup Program Icon

Step 7: The **InstallShield Wizard** starts (Figure 7-35).

Figure 7-35: The InstallShield Wizard Starts

Step 8: The **InstallShield Wizard** is prepared to guide the user through the rest of the process (Figure 7-36).

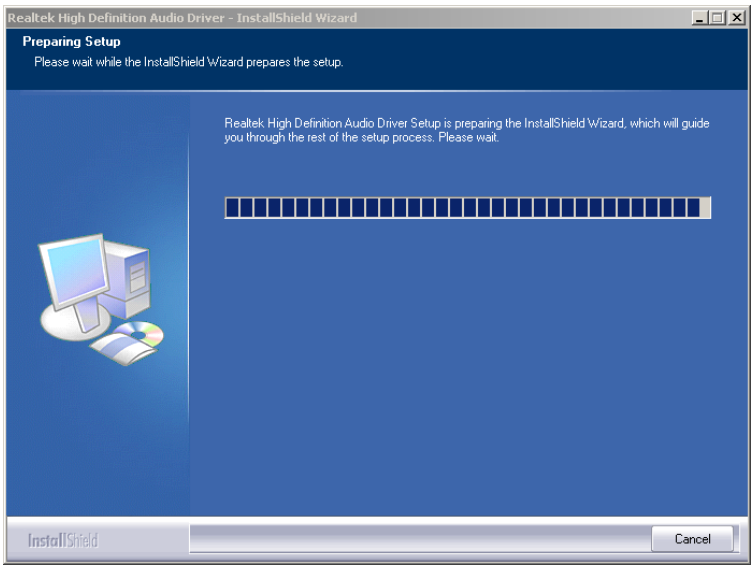
Realtek High Definition Audio Driver - InstallShield Wizard
Preparing Setup
Please wait while the InstallShield Wizard prepares the setup.
Realtek High Definition Audio Driver Setup is preparing the InstallShield Wizard, which will guide you through the rest of the setup process. Please wait.
InstallShield
Cancel

Figure 7-36: Preparing Setup Screen

Step 9: Once initialized, the **InstallShield Wizard** welcome screen appears (Figure 7-37).

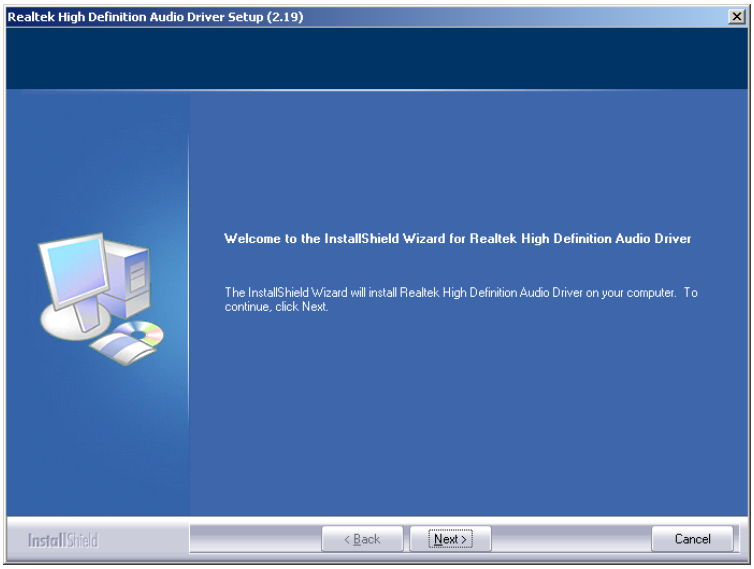
Realtek High Definition Audio Driver Setup (2.19)
Welcome to the InstallShield Wizard for Realtek High Definition Audio Driver
The InstallShield Wizard will install Realtek High Definition Audio Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

Figure 7-37: InstallShield Wizard Welcome Screen

Step 10: Click **NEXT** to continue the installation.

Step 11: InstallShield starts to install the new software as shown in Figure 7-38.

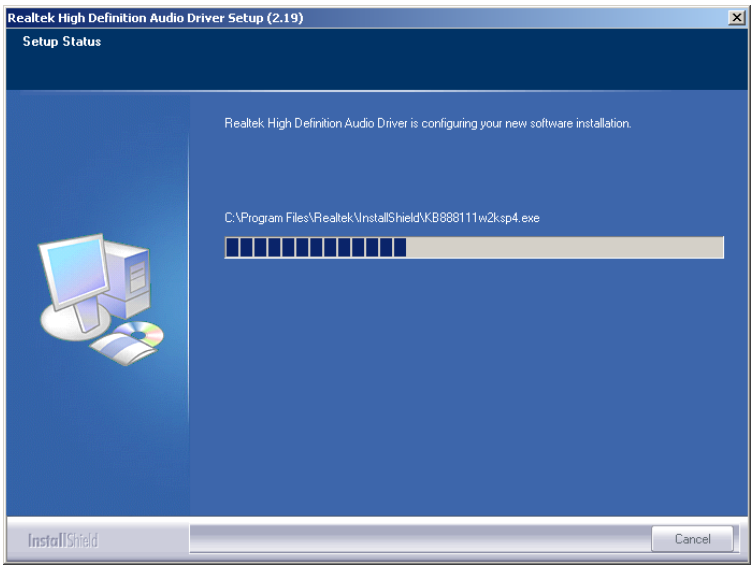
Realtek High Definition Audio Driver Setup (2.19)
Setup Status
Realtek High Definition Audio Driver is configuring your new software installation.
C:\Program Files\Realtek\InstallShield\KB888111w2ksp4.exe
InstallShield
Cancel

Figure 7-38: Audio Driver Software Configuration

Step 12: The Installation Wizard updates the system as shown in Figure 7-39.

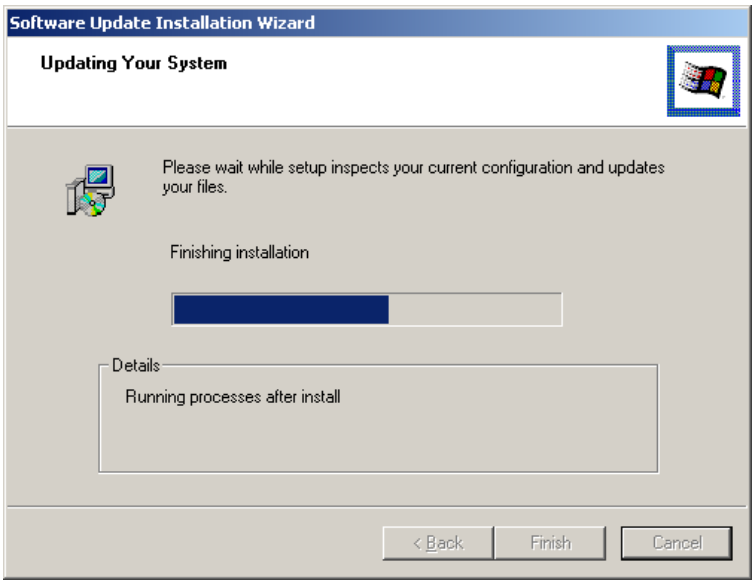

Figure 7-39: Installation Wizard Updates the System

Step 13: After the driver installation process is complete, a confirmation screen appears (Figure 7-40).

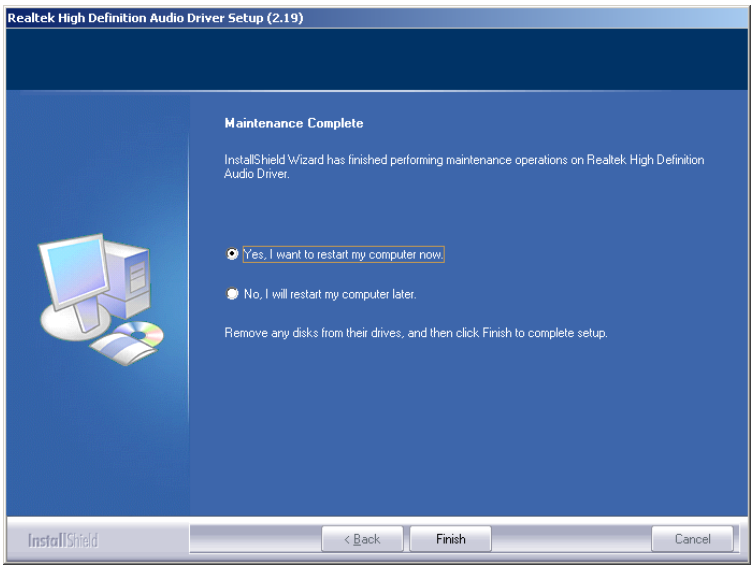
Realtek High Definition Audio Driver Setup (2.19)
Maintenance Complete
InstallShield Wizard has finished performing maintenance operations on Realtek High Definition Audio Driver.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
InstallShield
< Back
Finish
Cancel

Figure 7-40: Restart the Computer

Step 14: The confirmation screen offers the option of restarting the computer now or later. For the settings to take effect, the computer must be restarted. Click **FINISH** to restart the computer.

7.8 IDE Controller Installation

To install the IDE controller, please follow the steps below.

Step 1: Open **Windows Control Panel** (Figure 7-41).

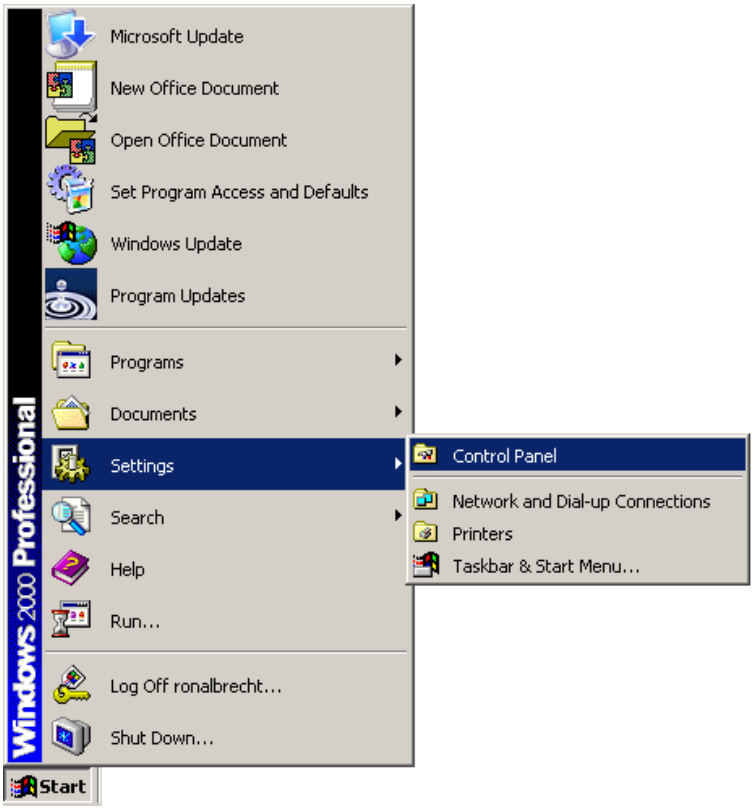

Figure 7-41: Access Windows Control Panel

Step 2: Double-click the **System** icon (Figure 7-42).

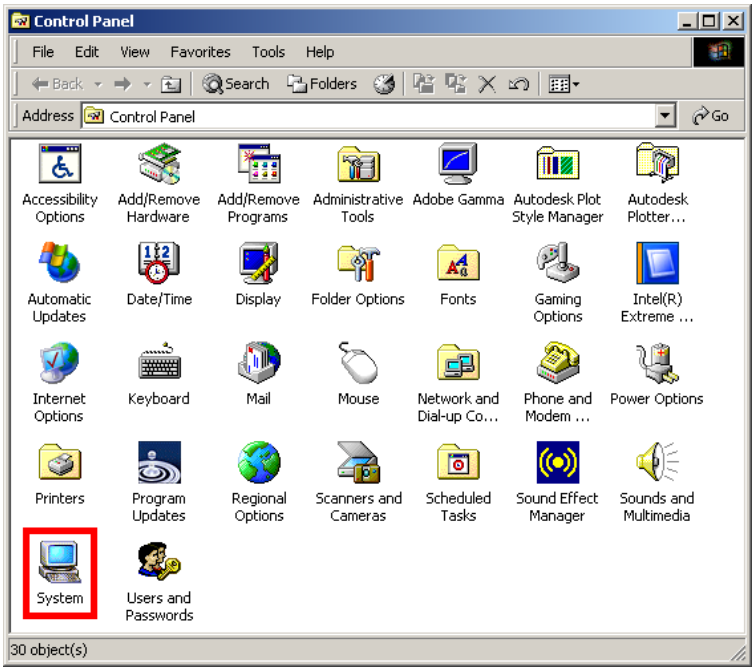

Figure 7-42: Double Click the System Icon

Step 3: Click the **Device Manager** tab (Figure 7-43).

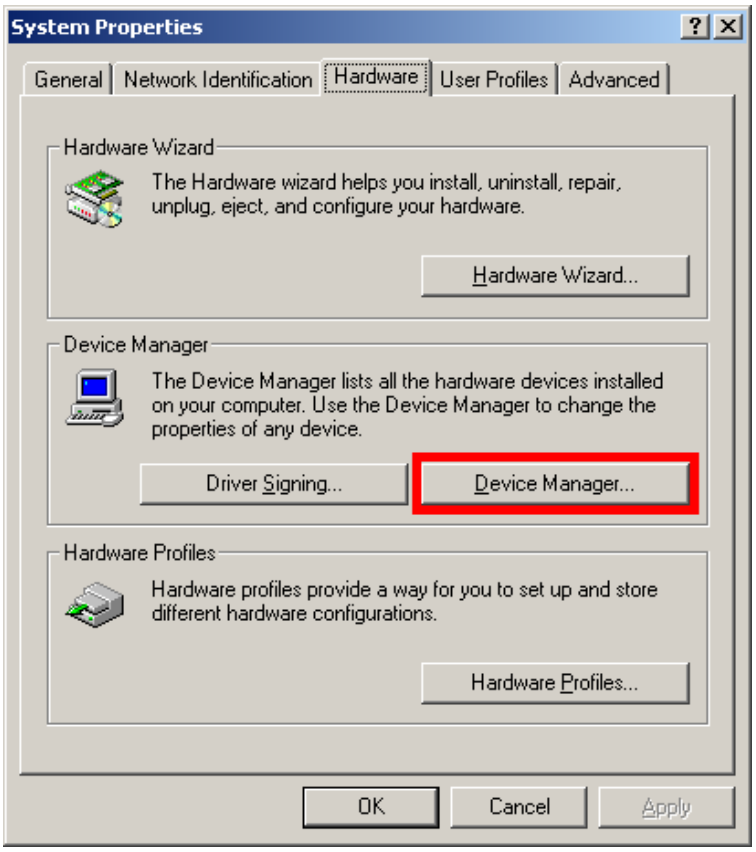
System Properties
General
Network Identification
Hardware
User Profiles
Advanced
Hardware Wizard
The Hardware wizard helps you install, uninstall, repair, unplug, eject, and configure your hardware.
Hardware Wizard...
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Driver Signing...
Device Manager...
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles...
OK
Cancel
Apply

Figure 7-43: Double Click the Device Manager Tab

Step 4: A list of system hardware devices appears (Figure 7-44).

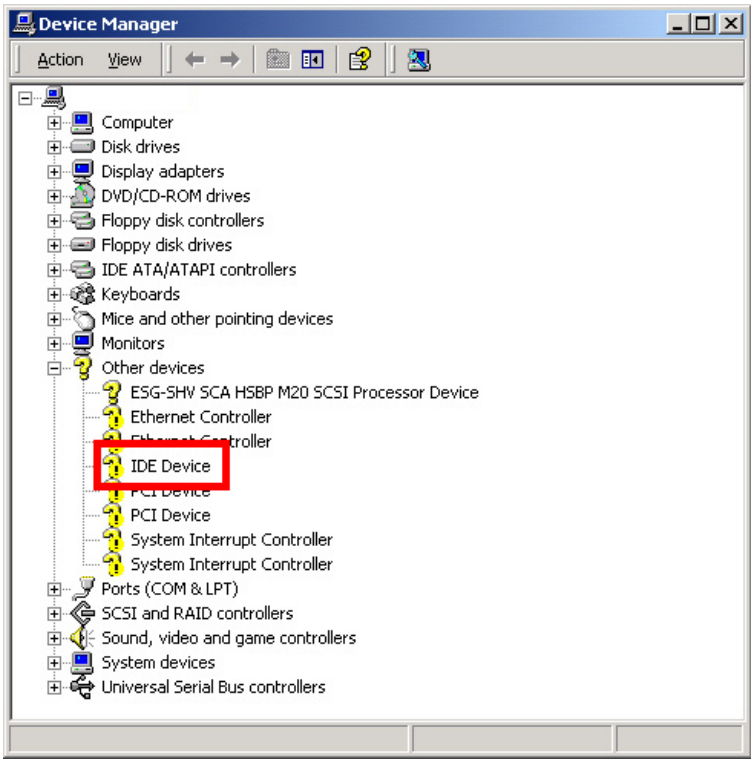

Figure 7-44: Device Manager List

Step 5: Double-click the listed device that has question marks next to it (This means Windows does not recognize the device).

Step 6: The **Device Driver Wizard** appears (Figure 7-45).

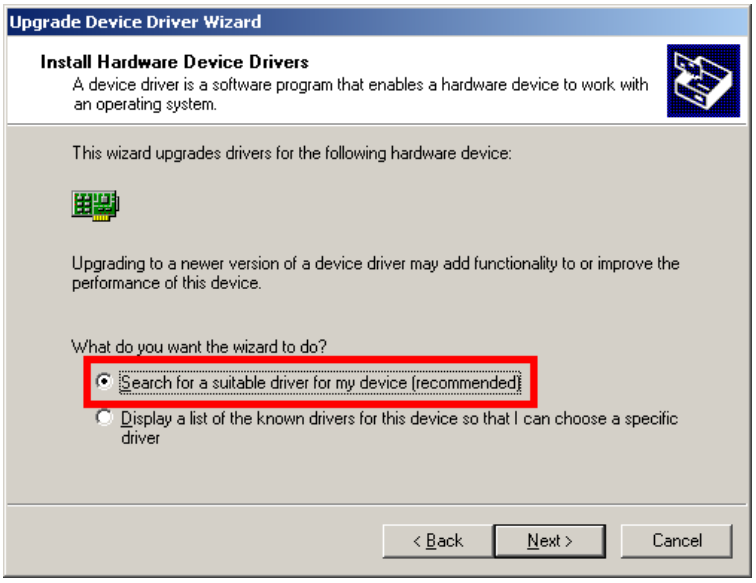
Upgrade Device Driver Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard upgrades drivers for the following hardware device:
Upgrading to a newer version of a device driver may add functionality to or improve the performance of this device.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

Figure 7-45: Search for Suitable Driver

Step 7: Select "**Search for a suitable driver for my device (recommended)**," and click **NEXT** to continue.

Step 8: The **Locate Driver Files** window (Figure 7-46) appears.

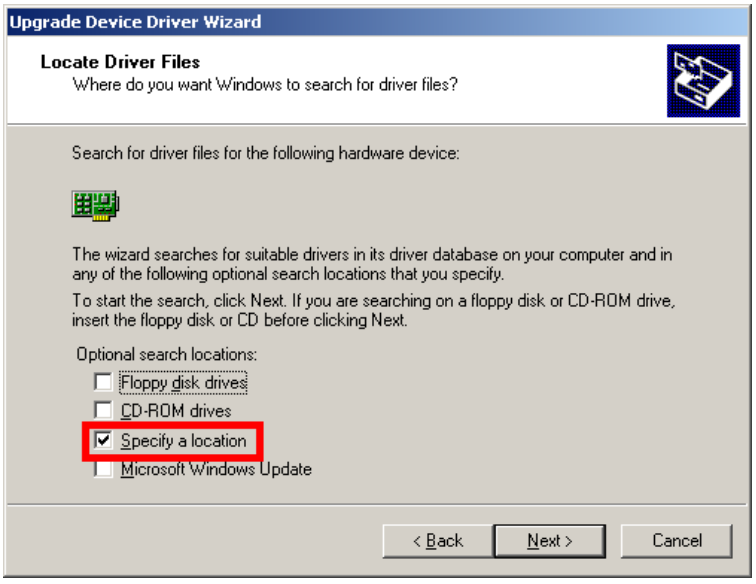
Upgrade Device Driver Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

Figure 7-46: Locate Driver Files

Step 9: Select "**Specify a Location**" and click **NEXT** to continue.

Step 10: Select the proper OS folder under the "**X:\7-IDE\IT8211 v1.3.2.8**" directory (Figure 7-47) in the location browsing window, where "**X:\"** is the system CD drive.

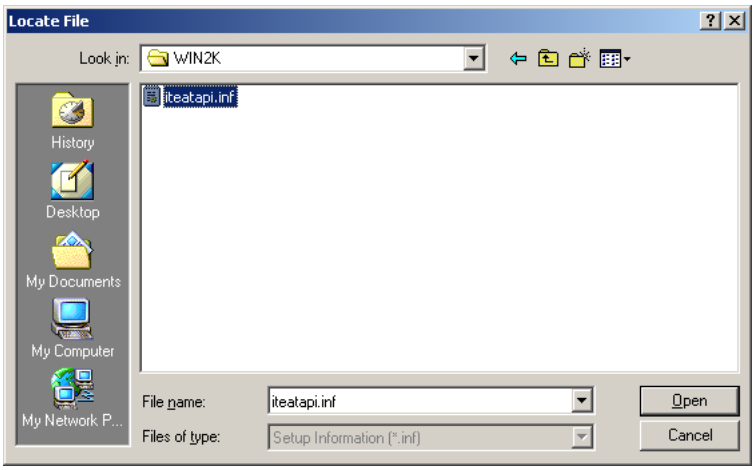

Figure 7-47: Location Browsing Window

Step 11: Select the **iteatapi.inf** file, click **OPEN** and the driver is installed.

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Appendix

A

BIOS Menu Options

A.1 BIOS Configuration Options

Below is a list of BIOS configuration options described in **Chapter 6**.

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- Discard Changes 149
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Appendix

B

Watchdog Timer

NOTE:

The following discussion applies to DOS environment. IEI support is contacted or the IEI website visited for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMIs or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table B-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. When the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

NOTE:

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

        MOV     AX, 6F02H       ;setting the time-out value
        MOV     BL, 30          ;time-out value is 48 seconds
        INT      15H
 ;
; ADD THE APPLICATION PROGRAM HERE
;
        CMP      EXIT_AP, 1     ;is the application over?
        JNE       W_LOOP        ;No, restart the application

        MOV     AX, 6F02H       ;disable Watchdog Timer
        MOV     BL, 0           ;
        INT      15H
;
; EXIT ;
```

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Appendix

C

Address Mapping

C.1 IO Address Map

I/O address Range	Description
000-01F	DMA Controller
020-021	Interrupt Controller
040-043	System time
060-06F	Keyboard Controller
070-07F	System CMOS/Real time Clock
080-09F	DMA Controller
0A0-0A1	Interrupt Controller
0C0-0DF	DMA Controller
0F0-0FF	Numeric data processor
1F0-1F7	Primary IDE Channel
2F8-2FF	Serial Port 2 (COM2)
378-37F	Parallel Printer Port 1 (LPT1)
3B0-3BB	SiS661CX Graphics Controller
3C0-3DF	SiS661CX Graphics Controller
3F6-3F6	Primary IDE Channel
3F7-3F7	Standard floppy disk controller
3F8-3FF	Serial Port 1 (COM1)

Table C-1: IO Address Map

C.2 1st MB Memory Address Map

Memory address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
F0000-FFFFF	System BIOS
1000000-	Extend BIOS

Table C-2: 1st MB Memory Address Map

C.3 IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	ACPI
IRQ2	Available	IRQ10	LAN
IRQ3	COM2	IRQ11	LAN/USB2.0/SATA
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	SMBus Controller	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Available	IRQ15	Secondary IDE

Table C-3: IRQ Mapping Table

C.4 DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

Table C-4: IRQ Mapping Table

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Appendix

D

DIO Interface

D.1 DIO Interface Introduction

The DIO connector on the WSB-9154 is interfaced to GPIO ports on the ITE Super I/O chipset. The DIO has both 4-bit digital inputs and 4-bit digital outputs. The digital inputs and digital outputs are generally control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.

NOTE:

For further information, please refer to the datasheet for the ITE Super I/O chipset.

D.2 DIO Connector Pinouts

The following table describes how the DIO connector pins are connected to the Super I/O GPIO port 1.

Pin	Description	Super I/O Pin	Super I/O Pin Description
1	Ground	N/A	N/A
2	VCC	N/A	N/A
3	Output 3	GP27	General purpose I/O port 2 bit 7.
4	Output 2	GP26	General purpose I/O port 2 bit 6.
5	Output 1	GP25	General purpose I/O port 2 bit 5.
6	Output 0	GP24	General purpose I/O port 2 bit 4.
7	Input 3	GP23	General purpose I/O port 2 bit 3.
8	Input 2	GP22	General purpose I/O port 2 bit 2
9	Input 1	GP21	General purpose I/O port 2 bit 1
10	Input 0	GP20	General purpose I/O port 2 bit 0

Table D-1: DIO Connector Pinouts

D.3 Assembly Language Samples

D.3.1 Enable the DIO Input Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O input functions is listed below.

MOV	**AX, 6F08H**	Sets the digital port as input
INT	**15H**	Initiates the INT 15H BIOS call

D.3.2 Enable the DIO Output Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O output functions is listed below.

MOV	**AX, 6F09H**	Sets the digital port as output
MOV	**BL, 09H**	
INT	**15H**	Initiates the INT 15H BIOS call

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